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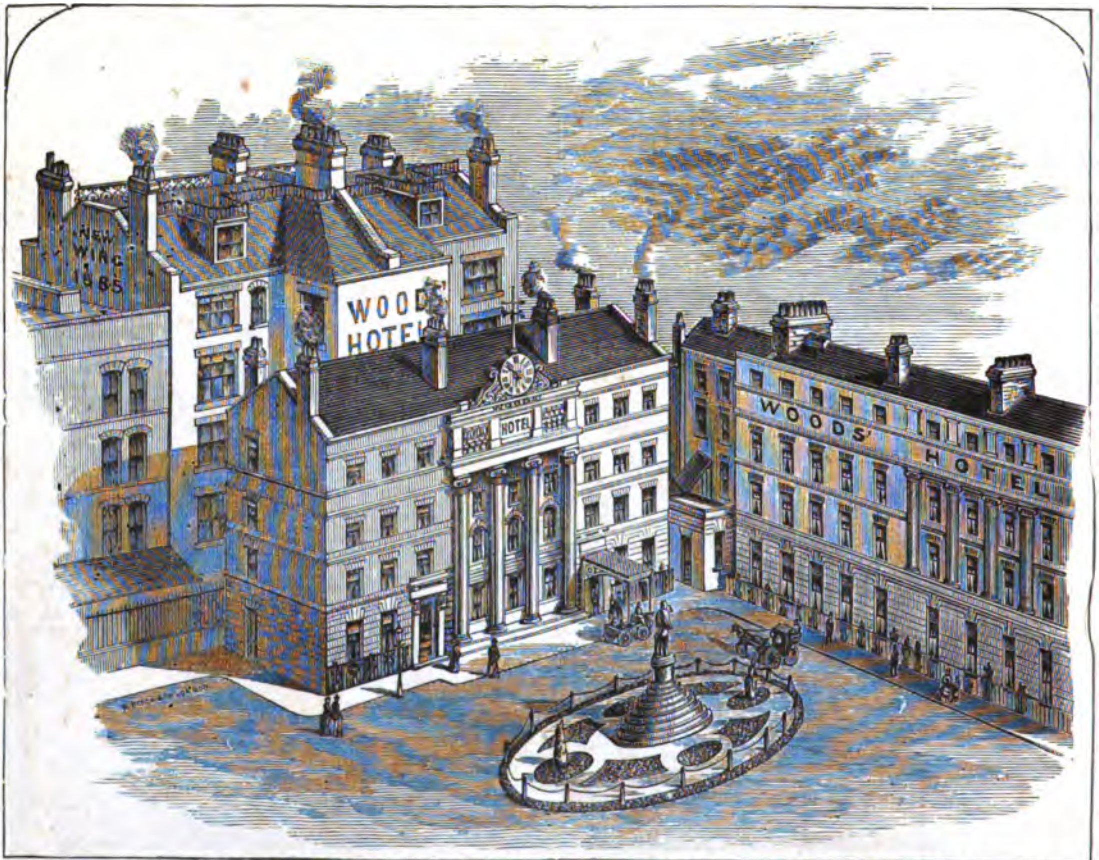

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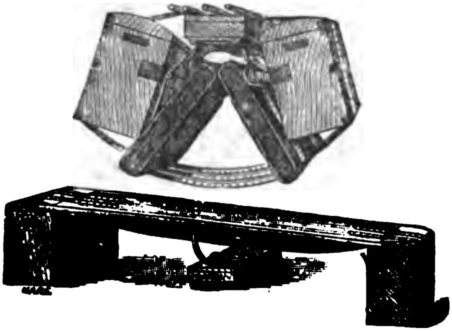

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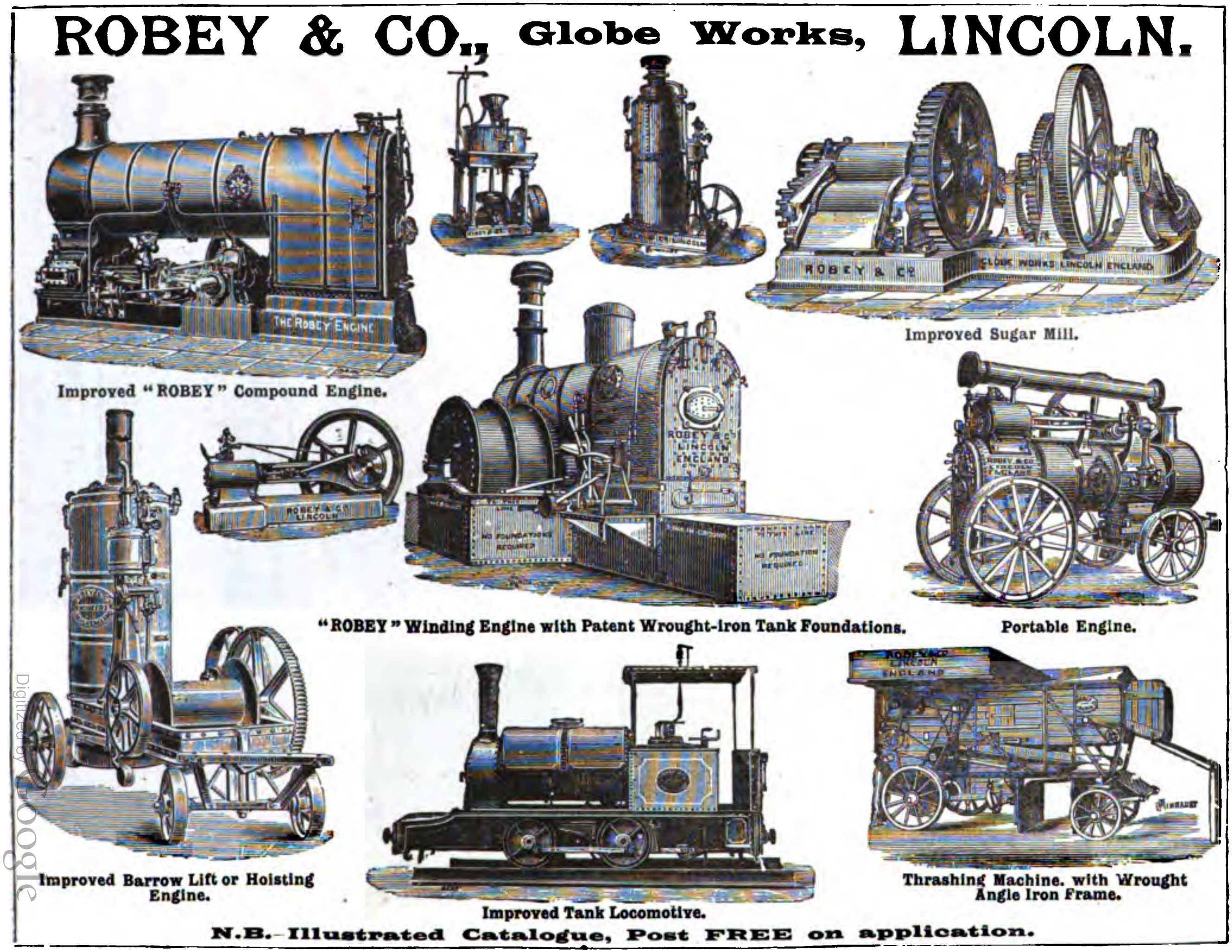

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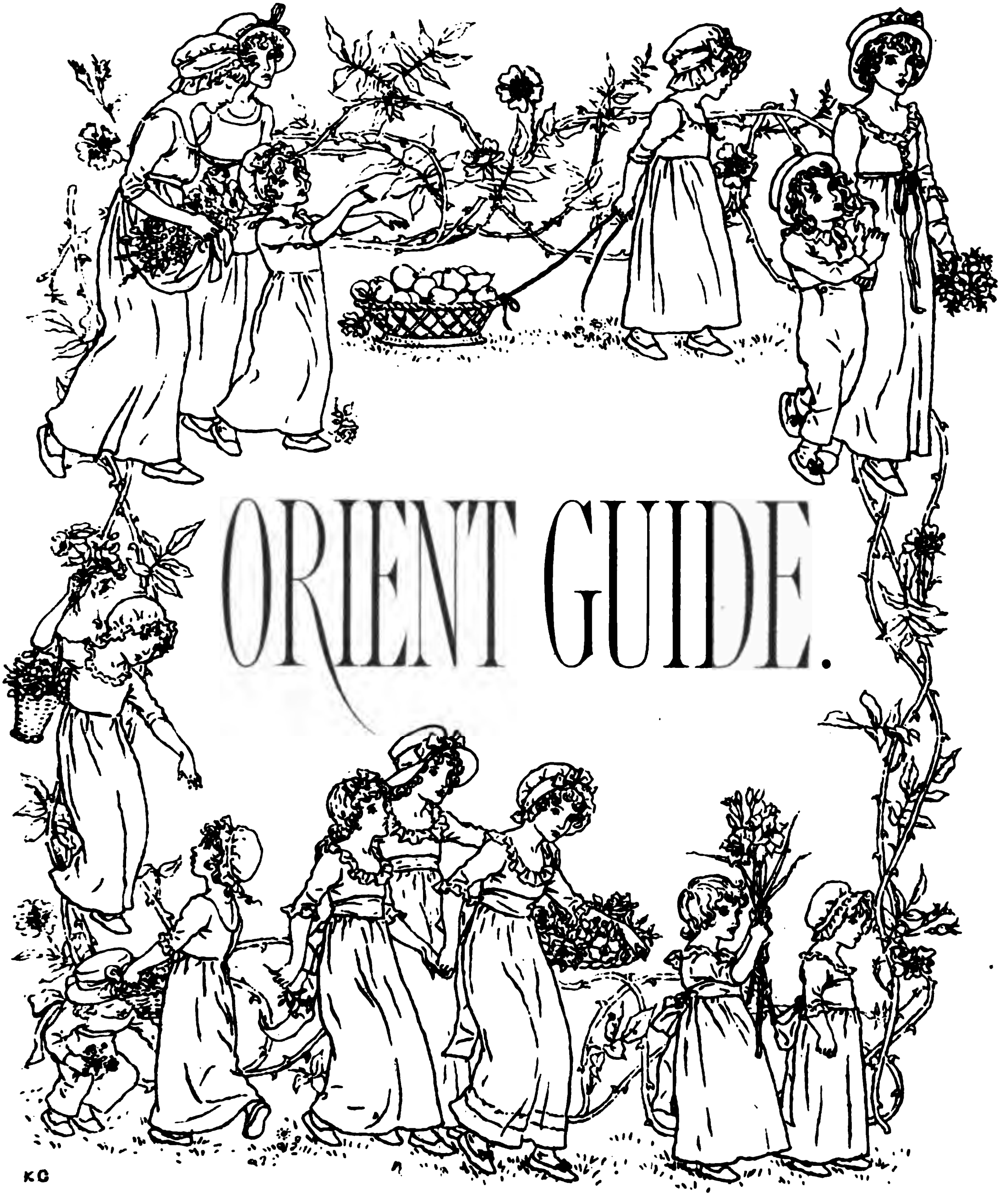

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THE THIRD EDITION, RE-WRITTEN, WITH MAPS AND PLANS.

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BY
W. J. LOFTIE, B.A., F.S.A.,
AUTHOR OF "A HISTORY OF LONDON," "WINDSOR," "AUTHORISED
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CONTENTS.

PAGES
INDEX TO CONTENTS - xvi—xxii
LIST OF ILLUSTRATIONS, MAPS AND CHARTS - xiii—xv
INDEX TO ADVERTISEMENTS - xxiii—xxv
LIST OF STANDARD BOOKS, GUIDE BOOKS, ETC. - xxvi—xxviii
PREFACE - xxx—xxxi
OFFICIAL GUIDE TO THE ORIENT LINE - xxxii—xxxvii
LIST OF AGENTS - xxxviii
LIST OF STEAMSHIPS - xxxix

CHAPTERS FOR TRAVELLERS—

CHAPTER I.

MEANS OF COMMUNICATION - 1—14

Improvements in Ship-Building—Duration of the Voyage to Australia—Speed, Comfort, Safety—The Orient Line Started—Description of the *Ormuz*—The Drawing Room—The Smoking Room—The Coffee Room—The Library—The Picture Gallery—The Cabins—The Second Saloon—The Third Class—The *Orient*—The *Orizaba*—The *Oroya*—The *Austral*—The Electric Light—The Refrigerator—Life on Board—Dress—Deck Chairs—Exercise—Games—" Bull "—Sketching—Mutual Forbearance—The Commander.

CHAPTER II.

MEDICAL ASPECTS OF THE VOYAGE - 16—28

Climate on the Ocean—Ailments Specially Influenced—How to Obtain the Full Benefit of the Voyage—Clothing—Sea-Sickness.

CHAPTER III.

THE MOTHER COUNTRY - 29—48

Australians in England—Topography—London by the Thames—Greenwich—The Docks—Deptford—Thames Tunnel—The Tower—The Crown Jewels—The Armour—St. Paul's—London and the Suburbs—Old London—Westminster Abbey—London Sights—The National Gallery—The Blenheim Raphael—The Suffolk Leonardo—The Titians—The Waterloo Van Eyck—Turner—Gainsborough—The Story of "The Parish Clerk"—Hampton Court—Its History—Windsor Castle—Summary of its History—Places near London—Eltham—Edgware—The Charm of English Scenery.

CHAPTER IV.

PAGES

FROM LONDON TO GIBRALTAR - - - - - - - - - - - - - - - 49—68

Barking—Eastbury—Tilbury Deep Water Docks—Tilbury Fort—The Nore—The Channel—Fights in the Channel—The Bay of Biscay—Battle of Cape St. Vincent—The Battle of Trafalgar—Gibraltar.

CHAPTER V.

FROM GIBRALTAR TO NAPLES - - - - - - - - - - - - - - - 69—76

Gibraltar as seen from the Sea—The Town—Its History—The Great Siege—The Apes—Excursions from Gibraltar—Tangier—Malaga—Grenada—The Alhambra—Cape de Gata—Algiers—Sardinia—The Bay of Naples.

CHAPTER VI.

NAPLES - 77—98

Notes on Italian History—The Revival of Learning—Savonarola—Giordano Bruno—Galileo—Time of Year for a Visit—Guide Books—Naples—The Museum—The Bronzes—The Marbles—The Pictures—Pompeii—Domestic Life of the Romans—Pæstum.

CHAPTER VII.

CITIES OF ITALY - - - - - - - - - - - - - - - - - 99—114

Rome—The Campagna—Excursions—Assisi—Perugia—Cortona—Arezzo—Siena—Pisa—Florence—Monte Oliveto—Bologna—Ravenna—Ferrara—Padua—Venice—Verona—Milan—Turin—Genoa.

CHAPTER VIII.

GERMANY - 114—136

Nuremberg—Innsbruck—Munich—The Pinakothek—The Glyptothek—Bayreuth—Wagner's "Parsifal"—Dresden—Berlin—Charlottenberg—Queen Louisa—Cologne—Its Early Painters—The St. Gothard Railway.

CHAPTER IX.

FROM NAPLES TO PORT SAID - - - - - - - - - - - - - - 123—136

Capri—The Strait of Messina—Scylla and Charybdis—Taormina—Etna—The Ascent—Malta—Candia—Aboukir—The Battle of the Nile—Port Said—An Excursion to Jerusalem—Jaffa—The Site of Solomon's Temple—The Mosque of Aksa—The Holy Sepulchre—Different Nationalities—Bethany—Bethlehem—Haifa.

CHAPTER X.

GREECE - 137—156

Mr. Richmond, A.R.A., on Greece—Authorities—The Isles—Syra—Delos—Naxos—Corfu—The Morea—Mykene—Argos—A Greek Wedding—Mantinea—Sparta—Crime in Greece—A Monastery—Messene—Temple of Apollo at Bassæ—Olympia—Greek Art—The Museum at Athens.

CHAPTER XI.

PAGES

THE SUEZ CANAL - - - - - - - - - - - - - - - - - 157—166

Lake Menzaleh—Port Said—In the War of 1882—The Canal Office—The Desert—The Mirage—The Channel—Piloting—Kantarah—El Guisr—Lake Timsah—Ismailia—The Serapeum—The Bitter Lakes—Chalouf—Port Tewfik—Terreplein—How the Canal is Worked—The Toy—Old Suez—The Expedition to Sinai.

CHAPTER XII.

FROM SUEZ TO CAIRO - - - - - - - - - - - - - - - - 166—178

Egyptology—Suez—Ismailia—Tel el Kebeer—A Timely Comet—Joseph and Moses—Zagazig—The Sacred Cat—The Delta—The Fellaheen—The Inundation—Cairo—The Nile—The Pyramids—The Sphinx—The Boolak Museum—The Royal Mummies—The Bazaars—The Citadel—Ismailia—A Warning.

CHAPTER XIII.

FROM SUEZ TO AUSTRALIA - - - - - - - - - - - - - - - 179—193

The Red Sea—The Gulf of Suez—Perim—Kamaran—Mocha—Aden—The Landing Place—The Tanks—Historical Notice—Sokotra—The People of the Coast—Monsoons—Colombo—Diego Garcia—Cape Leeuwin—King George's Sound.

CHAPTER XIV.

NATURE AT SEA - - - - - - - - - - - - - - - - - 194—244

Under the Sea—Colour Bands—Seaweeds—Luminosity of the Sea—Medusæ—Molluscs—Fishes—Sharks—Turtles—Cetacea—Birds—The Stars—The Ecliptic—The Solar Sytem—How to Know the Stars—The Precession of the Equinoxes—Scintillation—Movement of the Stars.

CHAPTER XV.

SEAMANSHIP, NAVIGATION, WEATHER - - - - - - - - - - - - 245—303

Sails—Ropes—Knots—Steering—Latitude—Longitude—Charts—The Compass The Log—Chronometers—The Lead—Weather at Sea—The Beaufort Notation—Clouds—Squalls—The Barometer—The Thermometer—The Hygrometer—Isobaric Charts—The Air—Winds—Tropical Cyclones—Winds and Weather between England and Australia—Universal Time.

CHAPTER XVI.

AUSTRALIA - - - - - - - - - - - - - - - - - - 304—360

Australia—New South Wales—Victoria—South Australia—The other Australian Colonies—Queensland—Tasmania—New Zealand—Oceania—General Summary.

List of Illustrations.

PAGE
TITLE PAGE (By Miss Kate Greenaway).
THE TOWER OF LONDON 32
WINDSOR CASTLE 44
PLYMOUTH, THE HOE 52
„ EDDYSTONE LIGHTHOUSE 54
CAPE TRAFALGAR, CAPE ST. VINCENT, SIERRA NEVADA, APE'S HILL, GIBRALTAR, ETNA 62
AMPHITHEATRE, POZZUOLI 72
NAPLES 74
POMPEII 94
PÆSTUM 96
ROME 98
THE CAPITOL 100
FLORENCE, AND BAKER'S SHOP, POMPEII 108
LAGO MAGGIORE AND LAGO DI COMO 120
ETNA FROM TAORMINA 124
JERUSALEM 132
STREET IN JERUSALEM 134
ATHENS (TOWER OF THE WINDS) 140
ATHENS (GENERAL VIEW) 154
THE SPHINX 172
BOULAK MUSEUM 174
SUEZ (THREE VIEWS), VIEW IN CAIRO AND PYRAMID OF MAYDOOM . . . 176
MOSQUE OF TOULOUN 178
SYDNEY TOWN HALL 314
MELBOURNE POST OFFICE 322
ADELAIDE 330
MITRE PEAK, NEW ZEALAND 346
NEW ZEALAND (TWO VIEWS) 350

MAPS AND CHARTS.

WEATHER CHARTS (Four) 16
BRITISH ISLES 28
THE THAMES (Tilbury to North Foreland) 30
ENGLISH CHANNEL (London to Plymouth) 50
SPAIN 66

MAPS AND CHARTS—*Continued.*

PAGE
EUROPE 68
ITALY 77
EGYPT 156
INDIA 190
DISTANCE TABLE 220
STAR MAPS (FOUR) 228
SOUTH AFRICA 236
WEATHER AT SEA 283
ANTI-CYCLONIC SYSTEM 286
TRACK, WIND, AND CURRENT CHART 290
THE WORLD ACCORDING TO PTOLEMY 296
UNIVERSAL TIME 302
AUSTRALASIA 304
NEW SOUTH WALES 308
SYDNEY HARBOUR 312
VICTORIA 316
PORT PHILLIP (MELBOURNE HARBOUR) 318
SOUTH AUSTRALIA 326
SOUTHERN QUEENSLAND 332
NORTHERN QUEENSLAND 334
WESTERN AUSTRALIA 338
,, ,, ... 339
TASMANIA 342
NEW ZEALAND (NORTH ISLAND) 344
,, ,, (SOUTH ISLAND) 345

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s.s. ORMUZ 2
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s.s. GARONNE 282

INDEX TO CONTENTS.

Aborigines, 335, 341, 343, 352
Abyssinia, 181
Achaia, 140
Aci Castello, 125
Aci Reale, 125
Adam's Sepulchre, 201
Adelaide, South Australia, 328, 332
Aden, 183-186
Advice to Voyagers, 11
Ægina, 154
Agriculture (Egypt), 171
Ailments influenced by the Australian Voyage, 21
Albanian Coast, 139
Albano, 102
Albany, W. Australia, 193, 342
Albatross, 219
Alboran, Island, 73
Alcamanes, sculptor, 152
Alexandria, 128
Algiers, 73
Alhambra, Spain, 72
Almeria, 73
Alps, 113
Ambrose, Bishop, 112
Amusements on Board, 12
Amusement Committee, 12
Anchors, 252
Andritzena, 151
Aneroid, 280
Angelo, Michael, 89, 94, 106, 108
Animals, distribution of, 201
Annesley Bay, 181
Antonello da Messina, 125
Arabic names of stars, 243
Aracaova, 143
Arezzo, 106
Argolic Hills, 142
Argolis, 140
Argos, 140
Ariosto, 111
Arnold of Brescia, 85
Arosa, Bay, 56
Artemisium, 144
Ashrafi Light, 179
Assisi, 103
Astroni crater, 73
Athens, 154
Atlantis, 198
Attaka Mount, 162
Auckland, 348
"Austral" Steamship, 6
Australia, duration of voyage, 1
    Discovery and colonization, 305
    Expedition into interior, 307
Australia, South, nomenclature, history, extent, climate, productions, population, revenue, &c., 328-333
Australia, Western, history, extent, climate, productions, population, revenue, &c., 339-342
Australian Life, Sports, &c., 357
Australians in England, 29

Babu'l Mandib Straits, 181
Badiet el Tih, 164
Baiœ, 73
Bandar Abbas, 188
Barking Abbey, 49
Barometer, 278
Bassœ, 151
Bass's Straits, 306
Baths, advice as to, 25
Bayreuth, 117
Beachy Head, 52
Bello Sguardo, 109
Benefit of a voyage, how best to obtain, 23
Berenice, 181
Bergamo, 112
Berlin, 119
Bethany, 135
Birds, 170, 210, 225, 346
Biscay, Bay of, 54
Bitter Lakes, 161
Blue Mountains, 308
Bluff Knoll, W. Australia, 192
Bologna, 110
Bonchurch, 52
Boolak Museum, 174
Botany Bay, 305, 314
Botticelli, 119
Bougasi, 150
Bournemouth, 52
Breaksea, 192
Brenner Railway, 115
Brescia, 112
Brighton, 52
Brisbane, 338
Bronzes, 92
Brothers, lighthouse, 180
Bruno, Giordano, 87
Burlings, rocks, 56
Butcher, Dean, account of journey to Jerusalem, 132

Cairo, 171, 178
Cagliari, 73
Campanella Point, 74
Candia, 128
Canning, George, at Chiswick, 48

Canons Park and "Eclipse," 48
Capodimonte, hill, 74
Capri, Island, 98, 123
Captain's authority, 14
"Captain" turret-ship, 56
Caracci, 110
Caraglia, Cape, 73
Castellmare, 74, 98
Cave Point, W. Australia, 192
Certosa, 113
Cetacea, 209
Ceylon, 190
Chagos Archipelago, 191
Chairs for deck, 12
"Challenger," Ship, voyage of, 197
Chalouf, 161
Channel, English, 53
  Naval Battles, 54
Charlemagne at Rome, 101
Charles V. at Richmond, 48
Charlottenburg, 119
Charts, 260
Charybdis, whirlpool, 124
Chiaja, hill, 74
Chirvati, 140
Chiswick House, 48
Chronometer, 267
Cintra, 56
Cleone, 140
Climate on the Ocean, 16
  Australian voyage, 17
  Australia, 307, 358
  New South Wales, 310
  Victoria, 320
  South Australia, 331
  Western Australia, 341
  Queensland, 336
  Tasmania, 343
  New Zealand, 347
  Fiji, 352
  New Guinea, 355
Clothing, advice as to, 25
Clouds, 275
Coal in New South Wales, 313
Collingwood, Admiral Lord, 60, 66
Collingwood, Mr., 204
Cologne, 120
Colombo, 190
Colour Bands, 203
Columbus, Christopher, 81, 114
Comfort on board steamers, 1
Comino, 126
Cominotto, 126
Como, Lake, 113
Compass, 262
Condostavli, 140
Cook, Captain James, 305
Cooper, Fenimore, account of Bay of Naples, 74
Coral Islands, 191
Corals, 200
Corfu, 139
Corinth, 140
Corregio, 94
Cortona, 105
Cowes, 52
Cowper, William, at Edmonton, 47
Cremona, 112
Cross Bearings, 271
Currents, 265, 290
Cuttle Fish, 207
Cyclades, islands, 139
Cyclones, 285

Dædalus reef, 181
Dahalak, 181
Damascus, 136
Damietta, 128
Dante, 81, 104, 110
Darling River, 309
Dead Reckoning, 264
Dead Sea, 136
Deal, 52
Della Robbia, 105, 108
Delos, island, 138
Delphi, 140
Depression and elevation of land, 194
Deptford, 31
Depths of the Sea, 197
Desert, 160
Diego Garcia, island, 191
Diet, advice as to, 24
Distances at sea, 272
Docks, London, 31, 32
Dolphins, 210
Donatello, 108, 110, 111
Doria, family of, 114
Dover, 52
Dresden, 118
Dress on board, 11
Dungeness lighthouse, 52
Durer, Albert, 116, 119

Eastbury, near Barking, 49
Eastbourne, 52
Eddystone Lighthouse, 53
Edgware, 47
Edmonton, 47
Egyptology, 166
Electric light, 6
Elevation and depression of land, 194
El Gusir, ridge, 160
Elis, 140
Eltham, 47
  Middle Park, 47
  "Blair Athol," price, 47
Employments during voyage, 12
Engines, ship's, by Mr. A. Brown, 10

Espichel, Cape, 57
Etna, 125
Eucalyptus tree, 318, 341, 344
Europa Point, 69
Evelyn, John, at Deptford, 31

Fairlight, 52
Fano, island, 139
Farisan, 181
Faro, cape, 124
Fatigue, 91
Fawcett, Mrs. Henry, on Italian history, 77
  German travel, 115
Fellaheen, 170
Ferrara, 110
Fiesole, 109
Fiji Islands, area, climate. productions, population, natives, revenue, &c., 352
Finisterra, cape, 54, 56
Fish, 207, 345, 350, 360
Flamingoes, 159
Florence, 108
  Railway routes from Rome, 103
  Time to visit, 90
Foreland, North, 51
  South, 52
Fox, Charles James, at Chiswick, 48
Francia (painter), 110, 116
Frescoes of Pompeii, 93
Fulham Palace, 48

Gajola, rock, 73
Galileo, 88, 108. 109
Games on board, 12
"Garofalo," 124
Gata, Cape de, 72
Gavdo, or Gozo, island, 128
General summary, 357
Genoa, 114
Genzano, 102
Germany, 115
German travel, by Mrs. Henry Fawcett, 115
Gibraltar, 67-70
  Siege of, 70
Giotto, 108, 111
Gold in the Colonies, 312, 323, 337, 345, 350
Goldsmid, Sir F., account of Ormuz, 188
Goodwin Sands, 51
Gozo (Malta), 126
Gozzoli, Benozzo (painter), 109
Gravesend, 51
Grays (or Gray's Thurrock), 50
Greece, by Mr. W. B. Richmond, A.R.A., 137
  Books on, 137
Greenwich, 31, 46
Grenada, 72
Guardafui, cape, 190
Guide Books—Italy, Rome, &c., 91
Guido, 110
Gull Stream, 51
Gwyder River, 309

Hadhramaut, 187
Hadleigh Castle, 51
Hadrian's villa, 102
Hagios of St. John, 144
Haifa, 136
Hals, Franz, 120
Hampton Court, 41
Handel's "Harmonious Blacksmith, 48
Hanish Islands, 181
Hannay, Mr., account of Battle of the Nile, 128
Hastings, 52
Hawks, 170, 211
Heliopolis, 175
Herculaneum, 74
Herne Bay, 51
Hill, Sir Rowland, at Tottenham, 47
Hodeidah, 183
Holbein, 118, 119
Holy Land, 132
Hydraulic machines, 10
Hygrometer, 281
Hull, Commander, on seamanship, 244

Indian Ocean, currents of, 290
Innsbruck, 115
Ischia, Island of, 73, 98
Isle of Dogs, 31
Isle of Grain, 51
Isle of Sheppey, 51
Isle of Wight, 52
Ismailia, 161
Isobaric Charts, 282
Israelites. 169
Italy, by Mrs. Henry Fawcett, 77
  Art, 78
  Archæology, 79
  Music, 80
  Commerce, 80
  Discoverers, 81
  Revival of Learning, 82
  Women of, 84
  Reformers, 84
  Philosophers, 87
  The Waldenses, 87
Ithaca, island, 139
Ithome, 148

Jaffa, 132
Jebel Attaka, 167
Jebel Dokan, 181
Jebel Gharib, 164
Jebel Hasan, 183
Jebel Katharina, 164
Jebel Moosa, 164
Jebel Raha, 164
Jebel Sudr, 164

Jebel Tair, 181
Jebel Zukur, 181
Jerusalem, account of journey to, by Dean Butcher, 132
Jerusalem, 132
Jervis, Sir John, 57
Jiddah, 181
Joseph, 169
Jubal, Straits of, 179
Judging distances at sea, 272

Kalamata, 148
Kalioob, 171
Kamaran, 181, 182
Kandy, 191
Kantarah, 160
King George's Sound, 193
Knots and plaits, 250
  (Nautical miles) 258
Kosair, 180
Kyra Vuysis, 143

Lachlan River, 309
Lalâ, 147
Lamb, Charles, at Edmonton, 47
Land grants, 332
Latitude, 258, 266
Latron, 132
Lead (for fathoming), 270
Leeuwin, Cape, 192
Leigh Church, 51
Lemuria, 201
Leonardo da Vinci, 113, 119
Life on board, 11
Lights, 255
Lights and Buoys, 261
Linen Bags for use in cabins, 11
Lipari Islands, 124
Lisbon, in the distance, 57
Littlehampton, 52
Lockyer, Mr. Norman, on universal time, 296
Log (at sea), 264
London approached by the Thames, 30
  History, &c., 34
  Public buildings, Museums, Palaces, &c., 37-41
  National Gallery, 38
Longitude, 259, 268
Lotus-flower, 170
Lowe, Sir Hudson, 123
Lower Hope Reach, 51
Lugano, 113
Luggage, heavy, 11
  In cabins, 11
Luini, 113
Luminosity of the sea, 204
Luther, at Rome, 101

Macquarie, Governor, 306
Macquarie River, 309
Madama, 161
Mafra Palace (Portugal), 56
Magdala, 181
Making the land, 270
Malaga, 71
Malta, 126
Mantinea, 140, 143
Mantua, 112
Maplin Sands, 51
Marco Polo, 81, 114
Margate, 51
Masandino, Cape, 188
Maskat, 187
Massowah, 181
Masts, 247
Matrah, 187
Mavromati, 149
"May Flower," ship, 52
Mazi, 151
Medical aspects of the voyage, by Mr. J. Struthers, M.B., 16
Medusæ, 205
Melbourne, 322
Memling, 116, 120
Memphis, 174
Menzaleh, Lake, 157
Merenptah, King, 169
Messene, 149
Messina, 124
  Strait of, 124
Middleton-Wake, Rev. C. H., on "the configuration of the earth under the sea," and Natural History, 194
Milan, 112
Millwall, 32
Mocha, or Mokha, 182
Molluscs, 207
Monsoons, 289
Monteagle, Lord, 49
Monte Generoso, 113
Monte Nuovo, crater, 73
Monte Olivetto (Florence), 109
Monte Serrato, villa, 56
Monza, 113
Moro Castle, 51
Moses, 169
  Wells, 164
Motto of the Orient Company, 6
Mountains, 330
Mucking Lighthouse, 51
Mukalla, 187
Mummies of Kings, &c., 175
Munich, 115
Murat, 123
Murray River, 308, 330
Morrumbidgee River, 309
Mutton Cargoes, 10
Mutual Forbearance, 13

Mykene, 140
Mykonos, island, 138
Mystra, 144

Names of the Ships of the Orient Line, 15
Naples, 74, 92
  Population, 97
  Time to visit, 90
  Bay of, 73
  Fenimore Cooper's account of, 74
Natural History at Sea, 202
Nauplia, 140
Nautilus, 207
Naval Battles in the Channel, &c., 54
Navigation, 257
Naxos, island, 138, 139
Necho's Canal, B.C. 600, 160
Neda, River, 130
Needles, 52
Nelson, Lord, 58-68
Nemea, 140
Nemi, 102
Newhaven, 52
New Caledonia as a penal settlement, 356
New Guinea, history, division, climate, natives, 353-355
New Hebrides, 356
  Convention between England and France in 1878; encroachment by the French, and Australian feeling on the subject
New South Wales, history, extent, climate, population, productions, commerce, revenue, &c., 305-318
New Zealand, animals, vegetation, climate, geography, Maories, colonization, population, revenue, &c., 346-351
Newspapers, Australian, 360
Nile, 171
  Battle of, Mr. Hannay's account, 128
Nile, Delta of, 128, 170
Nisa, 148
Nisida, islet, 73
Nore, or New Wier, 51
Nuremburg, 116
Norfolk Island, 306

Observation, 265-270
Oceania, 352
O'Hara's Folly (tower), 69
Olives, Mount of, 134
Olympia, 140, 151
Oman, 187
Oporto, 56
Oranges in the Colonies, 315, 311, 336
Orient Line, started, 2
  Motto, 6
  Names of Ships, 15
"Orient," Description of, 5
"Orizaba," Description of, 5
"Ormuz," " " 3
  Original pictures, 5
"Oroya," Description of, 5
Ormuz, island, 188
Ortegal, Cape, 56
Orvieto, 103
Ovo Castle, 74
Oysters, 350

Paddy-birds, 170
Padua, 110
Pæonias, sculptor, 152
Pæstum, 97, 124
Palinuro, Cape, 124
Palladio, 112
Palmer, Professor, 164
Pamisus, River, 150
Parnassus, Mount, 140
Parthenium, pass, 142
Patras, island, 139
Paulizza, 150
Pavia, 113
Perim Island, 181
Perth, W. Australia, 339, 342
Perugia, 103, 104
  Time to visit, 90
Perugino, Pietro, 105, 109
Pi Bast, mod. Tel Basta, 170
Pictures at Naples, 94
Pictures, original, in the "Ormuz," 5
Pisa, 107
Pitt, William, at Putney, 48
Phidias, sculptor, 153, 154
Phigaleia, Acropolis of, 151
Plymouth—The Sound, Scenery, Breakwater, 52, 53
Point de Galle, 191
Pompeii, 74, 95
Pompeian relics, 94
Porpoise, 210
Portici, 74
Port Said, 132, 157
Portsmouth, 52
Portland, 52
Port Tewfik, 162
"Portuguese Man of War," 206
Poseidonia, 98
Potsdam, 119
Potter, Paul, 120
Pozzuoli, 73
Praxiteles, sculptor, 116, 152, 154
Prickly Heat, 26
Princess Royal Harbour, W. Australia, 192
Procida, Island of, 98
Pumps, 10
Putney, 48
Pyramids, 172, 173
Pyrgos, 154

Queen Louisa of Prussia, 119
Queensland — history, boundaries, extent, climate, population, productions, revenue, &c., 333, 339

Railways in the Colonies, 315, 326, 332, 337, 351
Railway — Cairo to Suez, by Ismailia and Zagazig, 168
Rain, 276
Rainbows, 277
Rameses II., 169
Ramleh, 132
Ramsgate lighthouse, 51
Raphael, 94, 110, 113, 116, 118, 119
Ras Asir, Cape, 190
Ras Jered Hafun, Cape, 190
Ras Mohammed, Cape, 179
Ras Sufsáfeh, 164
Ravenna, 110
Reculvers, 51
Red Sea, 179
Refrigerator, 6
Reggio, 125
Rembrandt, 120
Resina, 74
Richmond Palace, 48
Roca, Cape, 56
Rome, 99, 102
  Time to visit, 90
Ropes, 248
Rotherhithe, 32
" Rule of the road " at sea, 255
Ruskin's " Stones of Venice," 111

Safety of Steamers, 2
Sails, 246
Saint Francis of Assisi, 104
  ,, Paul at Rome, 101
  ,, Peter at Rome, 101
Sakeeyeh (water-wheel on Nile), 171
Salerno, Gulf of, 124
Sanaa, 183
San Martino, hill, 74
San Miniato, 109
San Roque, 71
Sardinia, Island of, 73
Savonarola, 83, 86, 108, 111
Sawakin, 181
Sculpture at Naples, 93
Scylla, rock, 124
Seamanship, Navigation and Weather, by Commander Hull, 245
Sea-sickness, 26
Sea-weeds, 204
" Second Cataract," voyage to, on the Nile, 172
Serapeum, 161
Serpent-worship, 199
Setubal, 57
Seychelles Islands, 192
Sextant, 266
Sicily, time to visit, 90
Siena, 106
  Time to visit, 90
Sierra Nevada, 72
Sinai, 164
Siout, Railway to, 172
Shadoof (water lifter on Nile), 171
Shadwan Island, 179
Sharks, 209
Sharon, Plain of, 132
Sheerness fortifications, 51
Shipbuilding, improvements in, 1
Shoeburyness, 51
Sketching on board, 12
Sky, colour of, 275
Sofia, 145
Sohar, 187
Sokotra Island, 186
Solent, 52
Sorrento, 74, 98
Soundings, 261
South Australia, nomenclature, history, extent climate, production, population, revenue, &c., [328—333
Southampton, 52
Southend, 51
Spanish Armada, 52, 54
Sparta, 144
Spartivento, Cape, 73
" Speaking a Ship," 254
Speed of voyages, 1
Sphinx, 174
Spithead, 52
Squalls, 277
St. Alban's Abbey, 48
St. Alban's Head, 52
St. Angel's, mountain, 74.
St. Catherina, at Siena, 107
St. Catherine's Point, 52
St. Elias, mountain, 144
St. Elmo, Castle of, 74
St. Gemignano, 107
St. Gothard Railway, 115, 121
St. Katherine, Convent of, 164
St. Leonards, 52
St. Vincent, Cape of, 57
  Battle of, 56-62, by Mr. Hannay
Stars, 225-244
  —— Arabic names of, 243
Start Lighthouse, 52
Steamers, description of, 3-6
Steering, 250
Stephan, Meister, of Cologne, 121
Stevenson, Mr. J. J., designer of the saloons, &c., 4, 6
Stromboli, 124

Struthers, Mr. J., medical aspects of the voyage, 16
Stuart, Mr. A. M., explorer, 329
Sturt, Captain, expedition of, 307
Suez, 163, 167
  Canal, 157
  Gulf of, 164
  to Australia, 179
  to Cairo, 166
Sydney, 314
Syra, island of, 138
Syracuse, 125

Tangier, 71
Taormina, 125
Tarifa, 67, 69
Tasmania—history, area, population, climate, productions, revenue, &c., 342-345
Tasso, 110
Taygetus, mountains, 144
Tegea, 143
Tel-el-Kebeer, 168
  Battle of, 168
Tenos, island, 138
Terreplein, 162
Teulada, cape, 73
Thackeray at Rome, 99
Thames Tunnel, 32
Theodosius, Emperor, 112
Thermometer, 280
Tilbury Docks, 50
  Fort, 51
Time, marked by bells, 254
  Greenwich, &c., 267-270
  Universal, 296 303
Timsah, Lake, 160
Tipsiana, 143
Titian, 116
Tivoli, 102
Torquay, 52
Torre del Annunziata, Port, 74
Torre del Greco, 74
Torres Vedras, heights of, 56
Toussoum, 161
Tower of London, 32
Trade Winds, 289
Trafalgar, Cape, 62
  Battle of, described by Mr. Hannay, 63-66
Tragoi, 150
Trasimene, lake, 105
Tripi, 145
Tripolitza, 143
Tropical Cyclones, 287
Turin, 114
Turtles, 209
Tuscany, time to visit, 90
Tyrins, 140

Under the sea, 194
Universal Time, by Mr. Norman Lockyer, 296
Ushant, 54

Valetta, town of, 54
Vallombrosa, 110
Van der Weyden, 116
Vandyke, 114
Van Eyck, 94, 119, 120
Venice, 81, 111
Ventnor, 52
Verona, 112
Veronese, Paul, 116
Vesuvius, 73, 74
Vicenza, 112
Victoria, boundaries, extent, history, climate, productions, population, finances, &c., 318-328
Vigo Bay, 56
Vinci, Leonardo da, 119
Vourkuno, Mount, 148
Voyage to Australia, duration, 1
  Employments, 12
  Climate, 17
  Ailments influenced, 21
  Benefit, 23

Wadi Tohum, bay, 190
Wagner, Richard, 117
Waldenses, 87
Walmer, 52
Walton, Izaak, at Edmonton, 47
"Watches" at sea, 253
Watling Street, 47
Watts, Mr. H. E., account of Australian Colonies, 304
Weather at sea, 273
  Between England and Australia, 291
Wellington, New Zealand, 348
Wentworth's expedition, 307
Western Australia, history, extent, climate, production, population, revenue, &c., 339-342
West Bay, 52
Westgate, 51
Westminster Abbey, 37
Wales, 209
Wilhelm of Cologne, 121
Winds, 284
Winds and Weather between England and Australia, 291
Windsor Castle, 43
Wine, Australian, 311, 321, 331
Woolwich, 30
Worthing, 52

Yemen, 183, 185

Zagazig, 170
Zebayir Islands, 181
Zemba, or Yemoo, 181
Zodiacal Light, 242

INDEX TO ADVERTISEMENTS.

			PAGE
Allen, J.	London	*(Bags and Portmanteaus)*	367
Anglo-American Brush Electric Light Corporation, Limited	London		381
Anglo-Egyptian Bank, Limited			408
Aplin, Brown & Co.	Townsville	*(Merchants)*	421
Argus, &c.	Melbourne	*(Newspaper)*	368
Atkinson & Co., R.	Dublin	*(Poplins, &c.)*	388
Bank of Van Dieman's Land, Limited	Tasmania		424
Barclay & Sons	London	*(Druggists)*	362
Bellman & Ivey	London	*(Sculpture)*	363
Benson & Co., J.	London	*(Trunks and Portmanteaus)*	369
Blyth & Sons	London	*(Furniture)*	390
Bowring, Arundel, & Co.	London	*(Outfitters)*	ii
British-Australasian and Anglo-New Zealand Times	London	*(Newspaper)*	366
Broadbent, R.	Port Said	*(Ships' Stores)*	407
"Caligraph" Writing Machine	London		383
Chambers & Seymour	Melbourne	*(Ironmongers)*	430
Clements, Mrs.	Hobart	*(Boarding Establishment)*	435
Collard & Collard	London	*(Pianos)*	361
Colonies and India	London	*(Newspaper)*	366
Dinneford & Co.	London	*(Chemists)*	389
Duminy & Co.	London	*(Champagnes)*	Face Title
Eastern Telegraph Company	London		382
Equitable Assurance Company	London		396-7
Fairplay	London	*(Newspaper)*	369
Fletcher, C.	Brisbane	*(House Agent)*	415
Foster & Sons, M .B.	London	*(Ales, &c.)*	384
Foster & Kelk	Brisbane	*(Ironmongers)*	416
George Hotel	St. Kilda		425
Glover & Co., Thos.	London	*(Gas-Meters, &c.)*	383
Goy, Limited	London	*(Outfitters)*	387
Grand Hotel	Melbourne		434
Grand Hotel	Naples		406
Great Western Railway			380
Great Western Hotel	Maryborough		424
Graves & Co., H.	Adelaide	*(Carriers, &c.)*	429
Gray & Co., Wm.	London	*(Painters, &c.)*	393
Heathorn's Hotel	Hobart		436
Heering, P. F.	Copenhagen	*(Cherry Brandy)*	385
Hotel Paris	Ismailia		409
Hotel Royal	Naples		405
Hotel Victoria	London	*(Hotel)*	371
Hotel Windsor	London	*(Hotel)*	374
Hubbuck & Son, Thos.	London	*(Paints, &c.)*	394
Huntley & Palmer	Reading	*(Biscuits)*	iv

			PAGE
Ilfracombe Hotel	Ilfracombe		iv
Imperial Hotel	Brisbane		423
Inns of Court Hotel	London	*(Hotel)*	372
Isotta Bros.	Naples	*(Hotels)*	405
Jack & Mackenzie	Brisbane	*(Drapers)*	422
Jaques Martin & Co., Limited	Melbourne	*(Commission Agents)*	429
Jenks & Wood	London	*(Upholstery & Furniture)*	369
Kirkaldy, Limited, John	London	*(Engineers)*	392
Liebig's Extract of Meat Co., Limited	London		438
Lilley & Son, John	London	*(Nautical Instruments)*	365
Lincoln, Bennett & Co.	London	*(Hatters)*	401
London & South-Western Railway			378
Lorimer & Co.	London	*(Cocaine Lozenges, &c.)*	vi
Macbrayne, David	Glasgow	*(Line of Steamers)*	365
Mackilligin & Co., R M.	London	*(Whiskey, &c.)*	404
Maclure & Co.	London	*(Lithographers)*	402-3
Maxwell, S.	Brisbane	*(Glass, Paints, &c.)*	411
Morehead & Co., B. D.	Brisbane	*(Merchants)*	412
Neave's Food for Infants and Invalids			389
New Hotel	Ismailia		408
New Oriental Bank Corporation, Limited	London	*(Bank)*	370
New Zealand Government			375
Nicholson & Co.	Melbourne	*(Pianos)*	432
Ogden & Co., J. F.	Melbourne	*(Shipping Agents)*	430
Orient Hotel	Hobart		435
Pacific Fire Company	London	*(Insurance)*	395
Palace Hotel	Brisbane		425
Poole & Lord	London	*(Shirtmakers, &c.)*	364
Port Said and Suez Coal Company	Egypt		410
Queensland Government			376
Queensland Lands, Conditions as to			418-19-20
Queensland National Bank			413
Ridges & Sons	Wolverhampton	*(Carriage Builders)*	399
Robert's Hotel	Sydney		426
Robertson & Moffat	Melbourne	*(Furniture, &c.)*	431
Robey & Co.	Lincoln	*(Machinery)*	iii
Ross, Munro & Co.	Port Said	*(Ships' Stores)*	409
Ross's Royal Ginger Ale, &c.	Belfast		386
Royal Bank of Queensland			422
Royal Hotel	Plymouth		399
Sampson & Co.	London	*(Shirt-Makers)*	437
Sandown	Isle of Wight		398
Schweppe & Co., Limited	London	*(Mineral Waters)*	Back Cover
Shepheard's Hotel	Cairo		407
Shepherd & Son, P. L. C.	Sydney	*(Seed Merchants)*	428
Smith & Sons, Limited, W. Howard	Melbourne	*(Steam Line)*	416
Smith & Sons, G., Sutherland	Melbourne	*(Wines)*	433

			PAGE
South-Australian Railways			436
South-Australian Register, &c.	Adelaide	(*Newspapers*)	368
South-Eastern Railway			379
Spearman's Devon Serges	Plymouth		364
Stanford, E.	London	(*Maps*)	400
Sturgeon, Messrs.	Grays	(*Live Stock*)	399
Suter, Hartmann & Co.	London	(*Rahtjen's Composition*)	391
Symons & Co., Jno.	Devonshire	(*Cyder*)	383
Tasmanian Government			377
Tasmanian Steam Navigation Company			415
Tate, F.	Melbourne	(*Baggage Agent*)	433
Telegraph, &c.	Brisbane	(*Newspapers*)	411
Trade Protective Institute	Brisbane		411
Tunbridge Wells Spa			v
Union Bank of Australia	London	(*Bank*)	367
Union Steamship Company of New Zealand			414
Vaughan-Jones, E.	London	(*Whiskey*)	385
Vella, C.	Port Said	(*Lace Merchant*)	410
Victoria Hotel	Baden-Baden		365
Wallach Bros.	Sydney	(*Furniture*)	427
Westminster Palace Hotel	London		373
Wilson & Southerden	Brisbane	(*Ironmongers*)	417
Wood's Hotel	London	(*Hotel*)	Front Cover

List of Standard Books on Australia, Egypt, and Italy:—

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History of Australia, 1787-1882, by James Allen. 1882.
First Twenty Years of Australia (1788-1808), by James Bonwick. 1882.
Official History of New South Wales. 1883.
History of Australia, by Geo. W. Rusden. 1884.
Australian Handbook, by Messrs. Gordon & Gotch. Yearly.
Australasia, by A. R. Wallace, with Ethnological Appendix by A. H. Keane. (4th Edition.) 1884.
Advance Australia, by Hon. H. Finch-Hatton. 1885.
Oceana, by James A. Froude. 1885.
Letters to Guy, by Lady Barker. 1885.
Australia, by George Sutherland. 1886.
Handbooks of the several Colonies issued in connection with the Colonial and Indian Exhibition. 1886.
New South Wales and Victoria in 1885, by Douglas M. Gane. 1886.
British Colonies in Australasia, by James Bonwick. 1886.
Official Year Book and Directory of Australia, Edited by Edward Greville. Yearly, from 1884.
Australian Essays, by Francis W. L. Adams. 1886.
Climate and Health in Australasia, by J. Bonwick. 1886.
Through the British Empire, by Baron von Hübner. 1886.
Statesman's Year Book. 1887.
Greater Britain, by Sir Chas. W. Dilke. 1866-67.
Australasia, by W. Wilkins. 1888.

EGYPT.

Murray's Handbook, Egypt and Sinai. 2 vols. 1880.
Bædecker's Lower Egypt and Sinai. 1878.
The Egypt of the Past, by Sir Erasmus Wilson. (2nd Edition.) 1882,
Egyptian Sepulchres and Syrian Shrines, by Viscountess Strangford. 1874.
Egypt from the Monuments, by S. Birch.
History of Egypt, by Dr. Brugsch. 2 vols. 1880.
The Ancient Egyptians, by Sir Gardiner Wilkinson. 3 vols. 1878.
Lane's Modern Egyptians. 2 vols. 1871.
A Thousand Miles up the Nile, by Amelia B. Edwards. 1877.
A Ride in Egypt, by W. J. Loftie. 1879.
Letters from Egypt, by Lady Duff Gordon. 1866, 1875.
Eöthen, by A. W. Kinglake.
Eastern Life, by Harriet Martineau. 1875.
Maspero's Egyptian Archæology. 1887.

ITALY.

Murray's Handbooks—comprising North Italy, Central Italy, Rome and its Environs, South Italy, the Italian Schools of Painting. 5 vols.
Bædecker's Handbook. 3 vols.
Ruskin's Stones of Venice.
Grimm's Life of Michael Angelo.
Hare's Walks in Rome. 2 vols. 1883.
Hare's Cities of Italy. 2 vols. 1883.
Romola, by George Eliot.
Sismondi's Italian Republics.
Whiteside's Italy in the Nineteenth Century. 1860.
Symonds's History of the Renaissance in Italy. 1881.
Twining's Symbols and Emblems of Early Christian Art. 1885.
Ancient Rome, by J. Henry Middleton. 1886.

PREFACE TO THE THIRD EDITION.

THE Managers commissioned the composition of the first edition of this work with the desire of placing before the public particulars of the route of the Orient Line, and of pointing out, as in a Guide Book, such information as to season, voyage, and destination, as may prove most useful to the intending passenger.

In this, the third, edition, many improvements have, I hope, been made. The abandonment of the Cape route has left room for expanded notices of places hardly mentioned before. The whole plan of the volume has been changed, and the reader will find a continuous narrative of a voyage from London to Australia, broken only by the notes of a journey home from Naples, and by excursions like that to Palestine or to Grenada; and, when the tropics are reached, by the chapters on interesting subjects connected with "a life on the ocean wave."

The character of the book being thus altered, I have been obliged to omit nearly, if not quite all the contributions to the former editions by Sir George Baden Powell, K.C.M.G. On the other hand the chapters on Naples, the Cities of Italy, and Home through Europe, by Mrs. Henry Fawcett, have been greatly enlarged; and Mr. David Hannay has furnished a complete account of the great naval victories over whose sites the ship passes on its outward voyage. This, I feel sure, will prove an attractive addition. Mr. Jas. Struthers, M.B., who has made the voyage several times in medical charge of steamships of the Orient Line, writes the chapter on Health at Sea, an entirely new contribution. I am indebted to Mr. W. B. Richmond, A.R.A., for his notes of a journey in Greece; and to Sir Frederic J. Goldsmid, C.B., K.C.S.I., for an account of Aden, Socotra, and other places at the mouth of the Red Sea. General Goldsmid has kindly added a note on Ormuz, the ancient city from which one of the ships takes its name. The Rev. C. H. Middleton-Wake, M.A., F.L.S., has entirely rewritten the chapter on Natural History, and has expanded that entitled Under the Sea. Mr. J. Norman Lockyer, F.R.S., has revised his notes on the Latitude and Longitude, and on the methods of reckoning time, which, notwithstanding the abstruse nature of the subject, he has treated with a clearness which will bring it within the reach of every reader. Commander Hull, R.N., has placed me under great obligation for his contributions—too many to enumerate separately—but particularly for the astronomical chapter, the chapter on seamanship, and navigation, and weather at sea. Mr. H. E. Watts has revised and enlarged his account of the Australian Colonies, including Tasmania, New Zealand, and the most recent additions to English territory in the South Seas. Miss Kate Greenaway has specially designed a title page for this edition. I have to apologise to some of these contributors for a few changes which I have had to make in order to bring the book up to date. In consequence of such alterations I have thought it best to remove the initials which, in the first edition, marked certain chapters, as I wish to be personally responsible for every page.

W. J. Loftie.

ORIENT LINE
OF
ROYAL MAIL STEAMSHIPS
BETWEEN
LONDON AND AUSTRALIA,

Managers: F. GREEN & CO.
ANDERSON, ANDERSON, & CO. Fenchurch Avenue, London, E.C.

For Freight or Passage apply to the latter Firm, or to any of the Agents.
See Page xxxviii.

INFORMATION FOR PASSENGERS.

N.B.—The following information is published as correct at the time of the issue of this Guide, but is not to be assumed to be correct at any future date, unless confirmed by the Managers or any of the Agents of the Line, to whom application should be made for the full particulars of Fares and Regulations before Booking.

PORTS OF CALL.—The Steamships of the Line call regularly at Plymouth, Gibraltar, Naples, Port Said, Ismailia (for Cairo) Suez, Albany, Adelaide, Melbourne and Sydney, and occasionally at Aden and Colombo.

FARES between England and the Ports of call of the Line in Australia each way range from about £16 . 16 . 0 upwards in the 3rd class, £30 upwards in the 2nd class, and from about £52 . 10 . 0 upwards in the 1st class, according in each case to the accommodation required.

THROUGH TICKETS are issued to and from all Ports in Australia, Tasmania, and New Zealand; also Single and Tourist Tickets between London or Australia and Gibraltar, Naples, Port Said, Ismailia (for Cairo) and Suez, and Aden and Colombo by Steamers calling there, and between all Ports touched at by the Steamers, except between London and Plymouth.

First and Second Saloon Passengers between London and Australia have the option of breaking the journey at any Port of call between Plymouth and Albany, or *vice versâ*, and resuming it within three months by a later Steamer of the Line having room.

RETURN TICKETS are issued at reduced rates.

THROUGH TICKETS FOR COLONIAL PORTS, AT WHICH THE STEAMERS OF THE LINE DO NOT CALL.—Passengers booked through for ports other than those at which the Steamers of the Line call, may remain on board the Orient Steamer without extra charge until the departure of the first branch Steamer, should the Orient Steamer remain in port so long; but the Orient Line will not be answerable for any hotel expenses or railway fares, &c., which may be incurred. Passengers proceeding by the first Intercolonial Steamer for their destination can have their baggage transferred free of charge, at owner's risk; but warehousing charges, if any are incurred, will be chargeable to the passenger.

BOOKING.—A deposit of half the passage money must be paid at the time of securing a berth, and the balance at least three days before embarkation. The deposit will be forfeited in the event of the Passenger not joining the ship.

The full name, age, occupation, and destination of the Passenger should be forwarded when application is made for a ticket.

OUTWARD VOYAGE.—TILBURY.—Passengers joining at Tilbury are conveyed from London, free of charge, on the day of embarkation by Special Train of the London, Tilbury, and Southend Railway, from Fenchurch Street Station to Tilbury, and thence by Steam Tender to the Steamer.

PLYMOUTH.—Passengers are embarked at this port by Steam Tender from Millbay Pier. Vouchers for travelling at reduced fares from Paddington or Waterloo Stations to Plymouth are issued by Messrs. ANDERSON, ANDERSON, & Co., on application. The Agents at Plymouth are Messrs. J. T. WRIGHT & Co., Duke of Cornwall Buildings.

NAPLES.—Passengers can join the Steamer at Naples nine days later than in London. Railway Tickets from London to Naples can be purchased with the Steamer Ticket if desired. Fares—£11 . 10 . 9 First Class, and £8 . 8 . 6 Second Class. Passengers travelling Overland to Naples are recommended to leave London on the Friday following the Steamer's departure from Tilbury, by the train leaving Charing Cross Station at 9.40 a.m., or Victoria Station at 11 a.m., reaching Naples at 1.32 p.m., on Sunday. Passengers can embark during the Afternoon. The Mails leave London at 8.5 p.m. on Friday, and are due at Naples at 7.30 Monday Morning.

Passengers can travel through with the Mails by booking places in the Sleeping Car. The extra charge is £5 . 7 . 8. The Agents at Naples are Holme & Co., 2, Via Flavio Gioja.

HOMEWARD VOYAGE.—Steam Tenders are provided for the convenience of Passengers on the day of Embarkation at Sydney, Melbourne, Adelaide, and Albany.

Naples.—Passengers deciding to land here should give notice to the Purser of their intention to do so before leaving Suez.

Plymouth.—A Steam Tender meets each Steamer on arrival, and Railway Tickets to London at reduced rates are issued to Passengers by the Great Western Railway Company, and London and South Western Railway Company, or these can be purchased in Australia of the Orient Line Agents at time of securing passage, or from the Purser on board.

When the number of Passengers landing at Plymouth is sufficiently large, a Special Train will be put on for the convenience of Passengers to London and intermediate Stations. Passengers are, therefore, recommended to give early notice to the Purser of their intention to land at Plymouth.

BAGGAGE.—First Class Passengers will be allowed 40 cubic feet each adult; Second Class 20 feet; Third Class 15 feet. Freight will be charged for excess. Every package must have the Passenger's name and destination distinctly painted, or otherwise permanently marked on it, with the words "*Wanted on the Voyage*," or "*Not Wanted on the Voyage*." Boxes for the Cabin should be marked "*Cabin*," and should not exceed 2 feet 8 inches long, 1 foot 6 inches broad, and 1 foot 2 inches high. One Package of this size can be taken in the Cabin by each Adult Passenger. Only the personal effects of the Passenger will be carried as baggage, not merchandise or other property.

The Companies are not responsible for loss, damage, or detention of baggage. Passengers should therefore look after its shipment, and its landing on their arrival at destination.

LETTERS AND TELEGRAMS.

Letters to Passengers at ports of call, should be addressed to the care of the Orient Line Agents at the respective ports—(see page xxxviii). Letters for Naples, sent in the ordinary course, should be posted in time for the evening despatch from London on the following Thursday after the Steamer leaves London. Letters and Newspapers posted after that time will only catch the Steamer if Registered and posted in time for the Evening despatch from London on the following day (Friday). Such Registered Letters should be addressed as follows:—

Registered
Mr. ....
On board the Orient Line Mail Packet..............................
(Care of the Commander),
Naples.

Parcels should be posted four days earlier.

It is recommended that an address be written on flap of Envelope, notifying the address to which the Letter may be forwarded if it should miss the Steamer. The transit is sometimes interrupted by snow, &c.

Passengers can, by payment of 20s. at time of booking, have their safe arrival at port of debarkation in Australia or New Zealand telegraphed to their friends in England. The full address, both of the Passenger and of the person to whom the arrival is to be announced, must be registered when booking passage. A ticket will then be given to the Passenger, which, on arrival, he will present to the Agent of Reuter's Telegram Co., who will despatch the telegram. If the Passenger when thus telegraphing records his Australian address in the books of Reuter's Telegram Company there, the charge for telegraphing address in any reply which his friends here may send can be saved.

The cost of Telegrams, including the address, from Naples to England is 4½d. per word, and from Egypt 1s. 10d. per word.

CAUTION TO PASSENGERS.—GOODS OF A DANGEROUS NATURE.

Persons concerned in sending or bringing on board the Steamers any goods of a dangerous or damaging nature incur the penalties imposed by statute, besides being liable for all damages.

Passengers are specially cautioned against bringing Matches, Cartridges, Caustic Acids, or other dangerous articles in their baggage.

REGULATIONS.

The object of all regulations adopted on board the Steamers is to ensure the general safety and comfort, and passengers are requested to conform to them, and to support the authority of the Captain in carrying them out.

EXPRESS FOR PARCELS AND SMALL PACKAGES.

Parcels can be conveniently and cheaply forwarded by the Orient Line. The freight charged ranges from 4d. per lb. upwards, and there are arrangements for sending parcels at a fixed rate to cover insurance, and to include delivery to practically any part of Australia or Great Britain.

Conditions and rates can be obtained from the Managers in London, or from any of the Agencies.

Contents and Value, also name of Shipper and Consignee, must be declared at the time of Booking. A wrong description of contents or false declaration of value shall release the Owners of the Steamers from all responsibility in case of loss, seizure, or detention, and the Goods shall be charged double freight, which freight shall be paid previous to delivery. [*See Caution at foot.*]

The Owners reserve to themselves the right of charging by weight, measurement, or value, and will not be accountable for any damage arising through insufficiency of address or packing.

Jewellery, Watches, and other valuables must be sealed over tape in countersunk holes.

All charges must be paid at time of shipment, for which Parcel Tickets will be given, specifying particulars of risk. Parcels are to be applied for to the Agents at the Port of Delivery, and no Package will be delivered to the Consignee without the production of the Parcel Receipt, except those booked through to the address of the Consignees.

All Parcels and small Packages must be distinctly addressed and marked "per Orient Express," and are carried subject to the terms and conditions set forth in the form of Bills of Lading used by the Line.

N.B.—Shippers are specially cautioned against forwarding by the Orient Express or Orient Late Express any letters or other matter which ought by Law to go through H.M. Post Office only.

Caution to Shippers—Goods of a Dangerous Nature.—Notice is hereby given, that the Owners of the Steamers will not receive on board their vessels any Goods of a dangerous or damaging nature. Shippers will be required to sign a Declaration for Parcels, Merchandise, Specie, &c. (form of which can be obtained of the agents), that the packages they may offer for shipment do not contain liquids, oils, spirits, or any articles of a dangerous or damaging character; and the attention of shippers and passengers is specially directed to the following clauses in the "Merchant Shipping Act, 1873," relative to articles of this description:—

"If any person sends or attempts to send by, or not being the master or owner
" of the vessel carries or attempts to carry in any vessel, British or foreign, any
" dangerous goods: (that is to say) aquafortis, vitriol, naphtha, benzine, gunpowder,
" lucifer matches, nitro-glycerine, petroleum, or any other goods of a dangerous
" nature, without distinctly marking their nature on the outside of the package con-
" taining the same, and giving written notice of the nature of such goods, and the
" name and address of the sender or carrier thereof to the master or owner of the
" vessel at or before the time of sending the same to be shipped or taking the
" same on board the vessel, he shall for every such offence incur a penalty not
" exceeding £100.

"If any person knowingly sends or attempts to send by, or carries or attempts
" to carry in any vessel, British or foreign, any dangerous goods or goods of a
" dangerous nature, under a false description, or falsely describes the sender or carrier
" thereof, he shall incur a penalty not exceeding £500.

"The master or owner of any vessel, British or foreign, may refuse to take on
" board any package or parcel which he suspects to contain goods of a dangerous
" nature, and may require it to be opened to ascertain the fact."

The Orient Company occasionally despatch a steamer from London for a pleasure cruise of four or five weeks or more. These trips afford an opportunity of enjoying a delightful yachting cruise at a minimum cost.

These cruises are duly advertised in the *Times* and other London daily papers.

The following itinerary will serve as a specimen:—

PLACE.

LONDON.
LISBON, stay 1 day.
TANGIER, stay 1 day.
GIBRALTAR, stay a few hours.
ALGIERS, stay 1 day.
PALERMO, stay 2 days.
NAPLES, stay 3 days.
CIVITA VECCHIA (for ROME) stay 2 days.

PLACE.

LEGHORN (for PISA and FLORENCE) stay 2 days.
GENOA, stay 1 day.
NICE (for RIVIERA) stay 1 day.
MALAGA (for GRANADA) stay 2 days.
PLYMOUTH.
LONDON.

This cruise occupies about 5 weeks.

OFFICES AND AGENCIES OF THE ORIENT LINE.

HEAD OFFICE—

LONDON: *Fenchurch Avenue, E.C.* { F. GREEN & CO.
ANDERSON, ANDERSON & CO.
Managers of the Line.

SYDNEY OFFICE: 39, *Pitt Street.*
(G. Skelton Yuill, General Manager in Australia.)

MELBOURNE OFFICE: *Collins Street West.* (T. E. Pugh, Branch Manager.)

ADELAIDE OFFICE: 28, *Grenfell Street.* (M. G. Anderson, Branch Manager.)

AGENCIES.

ADEN	Luke Thomas & Co., Limited.
ALBANY	J. McKail & Co.
ALEXANDRIA	R. J. Moss & Co.
BORDEAUX	H. Davis.
BRINDISI	Fratelli Nevegna.
BRISBANE	B. D. Morehead & Co.
CAIRO	Thos. Cook & Son.
CAPE TOWN	W. Anderson & Co.
COLOMBO	Whittall & Co.
FLORENCE	Wm. Miller.
GALLE	Delmége, Reid & Co.
GENOA	Granet, Brown & Co.
GIBRALTAR	Smith, Imossi & Co.
HOBART	Macfarlane Bros. & Co.
LEGHORN	Wm. Miller.
LISBON	E. Pinto Basto & Co.
MADEIRA	Blandy Bros. & Co.
MALTA	O. F. Göllcher & Rose & Co.
MARYBOROUGH	Corser & Co.
MAURITIUS	Blyth Bros. & Co.
MESSINA	Oates & Carrara.
NAPLES	Holme & Co.
NEW YORK	Thos. Cook & Son.
NEW ZEALAND	Union Steamship Co. of New Zealand, Lim. (Head Office, Dunedin), & their Agents throughout the Colony.
PALERMO	Thomas Brothers.
PARIS	H. Laurette & Co., and Thos. Cook & Son.
PLYMOUTH	J. T. Wright & Co.
PORT SAID	W. Stapledon.
ROCKHAMPTON	Union Mortgage and Agency Co., Lim.
ROME	A. Macbean & Co.
ST. HELENA	Solomon, Moss, Gideon & Co.
ST. VINCENT (C. de Verd Is.)	Cory Bros. & Co., and Millers & Nephew.
SUEZ	W. Stapledon.
TENERIFFE	Hamilton & Co.
TOWNSVILLE	Aplin Brown & Co., Lim.
TRIESTE	Schröder & Co.
VENICE	S. & A. Blumenthal & Co.

LIST OF

ORIENT LINE STEAM SHIPS.

	Tons.	H.P.
s.s. AUSTRAL	5,588	7,000
s.s. CHIMBORAZO	3,847	3,000
s.s. CUZCO	3,918	4,000
s.s. GARONNE	3,876	3,000
s.s. IBERIA	4,702	4,200
s.s. LIGURIA	4,688	4,200
s.s. LUSITANIA	3,825	4,000
s.s. ORIENT	5,386	6,000
s.s. ORMUZ	6,116	8,500
s.s. ORIZABA	6,184	7,000
s.s. OROYA	6,184	7,000

CHAPTER I.

MEANS OF COMMUNICATION.

IMPROVEMENTS IN SHIP-BUILDING.—DURATION OF THE VOYAGE TO AUSTRALIA.—SPEED, COMFORT, SAFETY.—THE ORIENT LINE STARTED.—DESCRIPTION OF THE *ORMUZ*.—THE DRAWING ROOM.—THE SMOKING ROOM.—THE COFFEE ROOM.—THE LIBRARY.—THE PICTURE GALLERY.—THE CABINS.—THE SECOND SALOON.—THE THIRD CLASS.—THE *ORIENT*.—THE *ORIZABA*.—THE *OROYA*.—THE *AUSTRAL*.—THE ELECTRIC LIGHT.—THE REFRIGERATOR.—LIFE ON BOARD.—DRESS.—DECK CHAIRS.—EXERCISE.—GAMES.—"BULL."—SKETCHING.—MUTUAL FORBEARANCE.—THE COMMANDER.

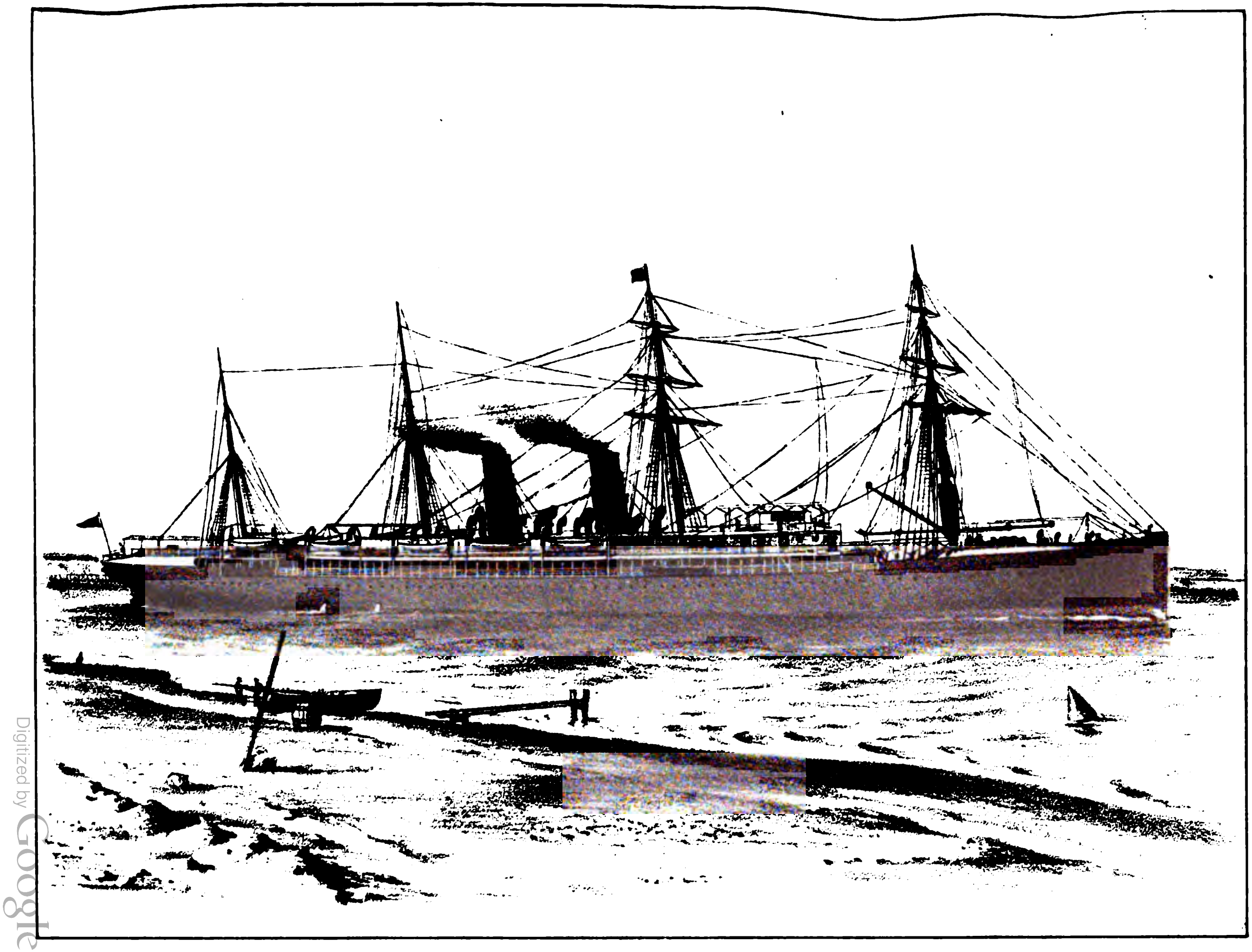
GREAT progress has been made of late years in the art—for it is an art—of building and organising passenger steamers. Since the Orient Company began to send its vessels to Australia, nay, since the first Edition of this book was issued, the improvements have been rapid. But it is since the publication of the second edition that some of the most magnificent ships have been launched, giving examples of the highest pitch of perfection yet attainable. From the passengers' point of view, what is wanted in an ocean steamer is speed, comfort, and safety. In describing the ships of the Orient Line we can promise an intending passenger all three. The voyage to Australia has been made in as little as twenty-seven days steaming time, that is from Plymouth to King George's Sound. Against such figures we may set the old ninety days voyage in a sailing clipper, while six months was a not uncommon passage in an ordinary ship. So much for speed. For comfort we must refer the reader to the pages (3—6) where we describe two or three of the steamers of the line, including the older but still popular vessels, in which also, the electric light, the refrigerator, and, in the tropics, the punkahs worked by steam, do all that is possible to annul the ordinary discomforts of a voyage. Here are no swinging, ill smelling, blinding oil lamps, no tough salt junk, no foul air, but good ventilation, fresh meat, ice *ad libitum*, and the soft steady light of the electric lamps, which seem to turn night into day on board, and which are motionless even in the roughest weather.

For safety, also, the records of this Line which has been running for nearly twelve years will compare favourably with those of any other. Not one single passenger has lost his life by shipwreck, and an all but total absence of other accidents to life and limb, such as those which occur in bad weather, afloat or ashore, will make many people who have made the voyage wish themselves at sea when the wind blows, when

> Tiles and chimney pots around their heads are flying,

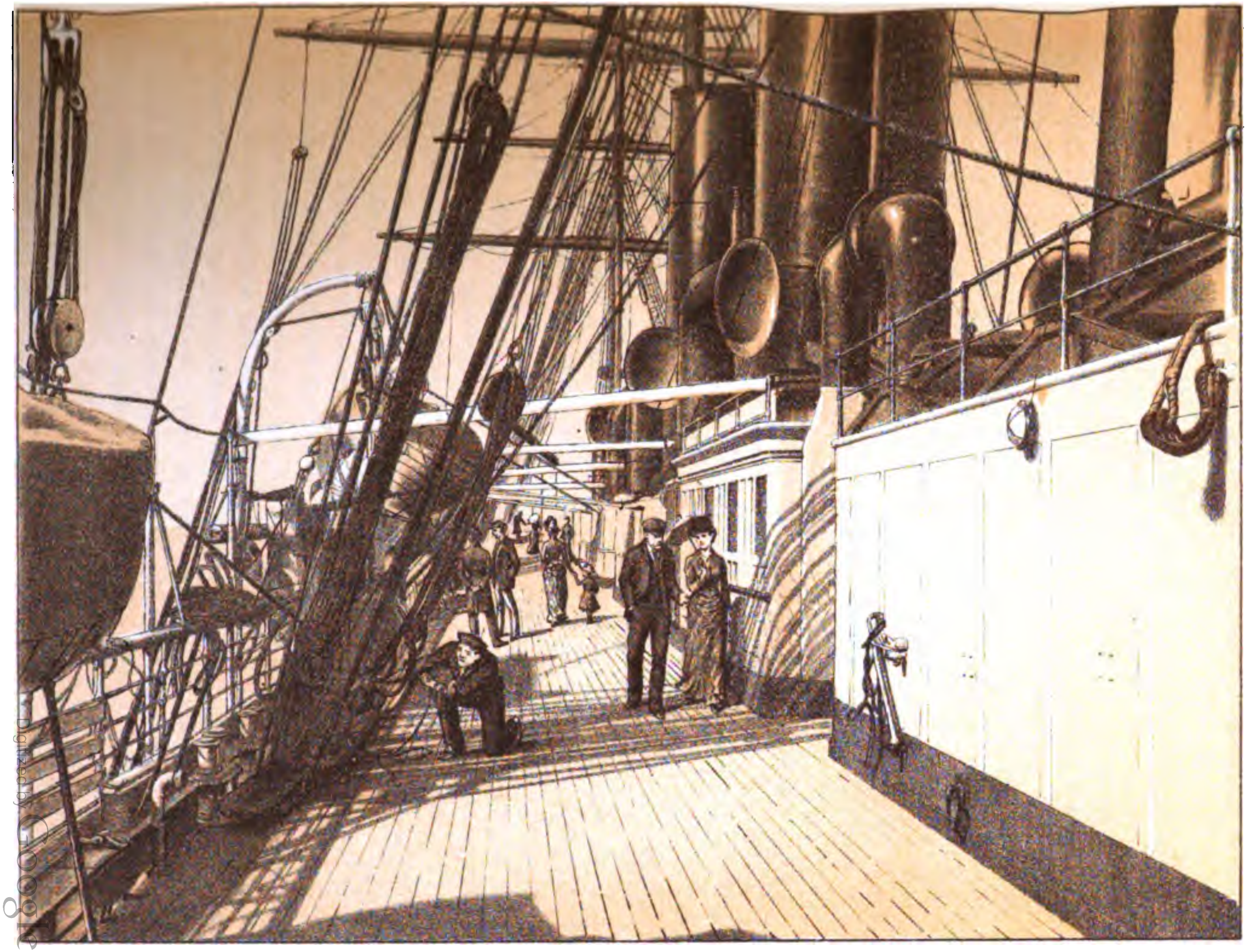
to quote from an old nautical song, in which the sailor in a gale of wind pities the "unhappy folks ashore." In the first ten years of its existence, from 1877 to 1887, the Company carried no fewer than one hundred and fifty thousand passengers.

Early in 1877 the London firm of Messrs. ANDERSON, ANDERSON & Co., perceiving that the time was come for founding a first-class steam line to Australia direct, commenced running with chartered steamers, and on the 7th March, 1878, the *Garonne* left London flying the new flag of the ORIENT STEAM NAVIGATION Co., LIMITED, which had been formed by the united efforts of the firm above named, and of Messrs. F. GREEN & Co., also of London, who had joined them for the purpose. At first only a monthly service was intended, but very soon it became plain that the traffic demanded fortnightly sailings. Four steamers, the *Chimborazo*, the *Lusitania*, the *Cuzco*, and the *Garonne*, already belonged to the company by purchase, and the *Orient* was built by the company specially for the trade. When in the beginning of 1880, the fortnightly service was determined upon, the Company were fortunate in obtaining the co-operation of the Pacific Steam Navigation Company, whose fine fleet of steamers was in full working order and admirably adapted for the Australian voyage. Troubles at that time breaking out in South America, left the Pacific Company at liberty to devote to the Orient Line the services of a portion of their fleet, and the Orient Company's fleet was still further reinforced by the launch of the *Austral*, a ship which closely resembles the *Orient*, but is of even greater size and power. The *Austral*, like the *Orient*, was built in accordance with the requirements of the Admiralty for ships which in case of war may be turned into cruisers. The *Orient* was selected by government to take out some of the principal officers of the Army despatched to Egypt in 1882, among them being H.R.H. the Duke of Connaught and his *suite*. Since that date three other large, swift, and luxurious



S.S. "ORMUZ."

S. S. "ORMUZ"



PROMENADE DECK.

steamers have been added to the fleet. They are the *Orizaba* and *Oroya*, of the Pacific Company, and the *Ormuz*, of the Orient Company.

In order to give some idea of the arrangements in these vast floating hotels, we may begin by a description of the last named, adding an account also of one or two of the older ships, so that the intending voyager may, if he has time, take his choice. There are some passengers of experience who prefer the old type, as more "shipshape," but after a voyage in one of the vessels of the new pattern, fitted with the latest inventions for comfort and convenience, most people will prefer them. Though there may be grumblers in every voyage, they are generally people who have never been to sea before, and who do not know that second-class passengers now enjoy accommodation which a few years ago, would have been unattainable even in the first-class.

The *Ormuz* among other novelties has the drawing room, furnished with a piano, on the hurricane deck, well forward, while the smoking-room is on the same deck well aft, so that the smell of tobacco need never interfere with the comfort of people who dislike it.

The total length of the Ship is 481 feet, and the breadth 52. Her gross registered tonnage is 6,116, and her effective horse-power 8,500, that is to say, if the term horse-power was strictly exact, all the horses in use in the British Army, if we could compel them to join in a gigantic tug of war with the *Ormuz*, would be pulled over. The engines are described more in detail further on in this chapter; here we need only note that they are constructed on the so called "triple expansion" principle, and are fitted with no fewer then seven vast boilers. The best run on a recent voyage was 420 knots in 24 hours.

The *Ormuz* is wholly built of "mild steel" and has a double bottom, with a space of three feet between the outer and the inner, divided into water-tight compartments. These compartments in most cases rise to the level of the upper deck. The holds are so divided that even if two of the largest of them were filled with water, the *Ormuz* would retain her buoyancy and safety. Like several other ships of this line she has been placed on the Admiralty List of cruisers, as she has been built in strict compliance with the naval regulations, and has been surveyed by an Admiralty officer. Fire as well as water is guarded against by the division of the upper, or inhabited part of the Ship into seven distinct compartments, fitted with sliding doors, which cause no inconvenience to the passengers.

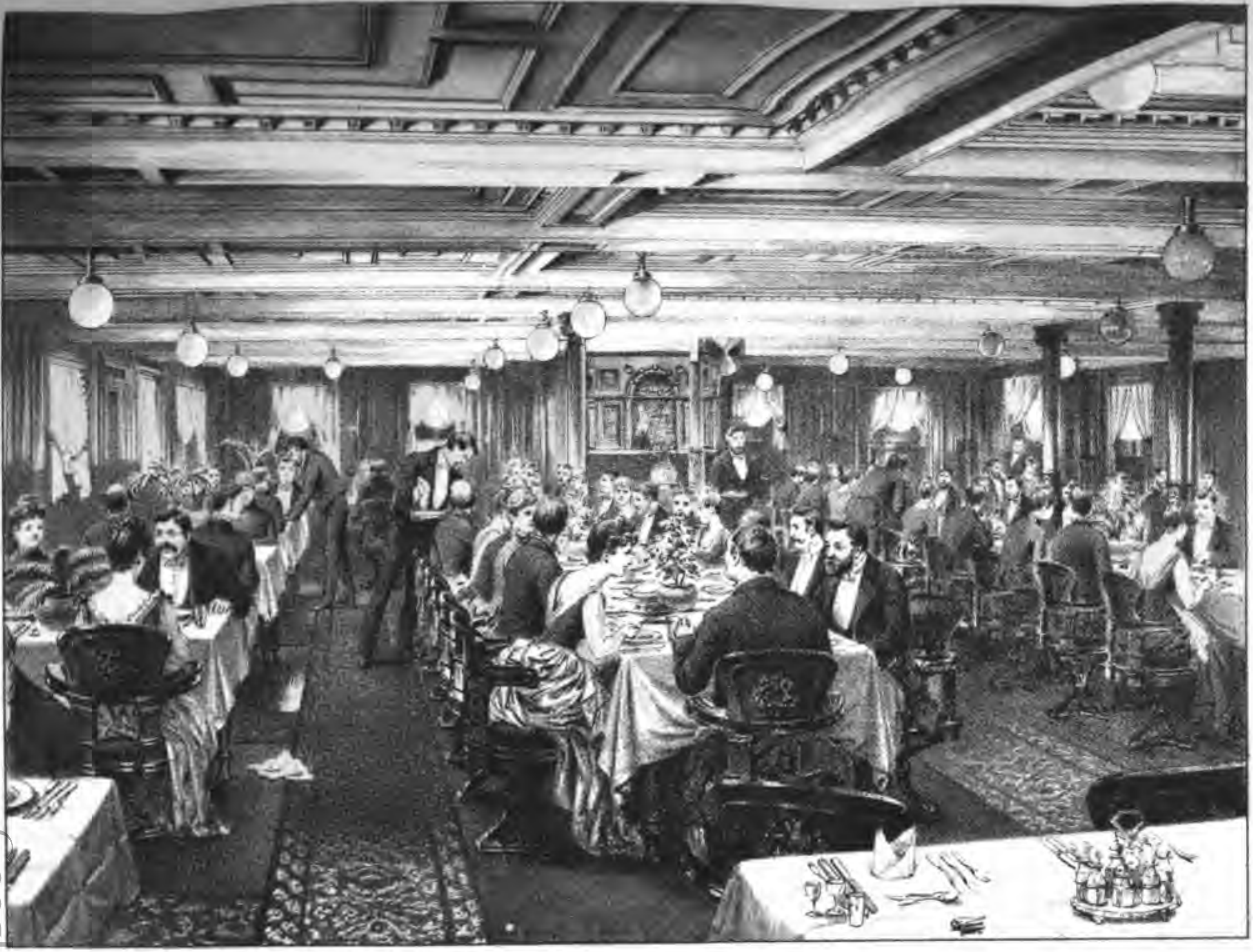
The "promenade deck" is 240 feet long by 50 wide, so that to walk about ten times round is equal to walking a mile. On this deck the apartment furthest forward is the drawing-room before mentioned; immediately aft of which is the chronometer room, close to it the captain's cabin, a pilot's room, and the main staircase or "companion," to the deck below. Another large "block" amidships contains the upper part of the engine room, and is so constructed that all smoke, heat and smell, are carried away above the passengers' heads. Beyond it again, going aft we come to the smoking room, beautifully fitted, with a special eye to comfort in the tropics, the seats being of cane, like those used in the New York overhead railway.

Below the promenade, or hurricane deck, is the upper deck. It is reached by the staircase already mentioned. At the forward end is the coffee room, or dining saloon, which differs in many respects from any saloon in another ship. It is 56 feet in length and 33 in width, and is about 9 feet in height. The design, a sketch of which was exhibited at the Royal Academy in 1887, is by Mr. J. J. Stevenson, who also designed the fittings of the *Orient* and the *Austral.* The whole of the furniture is of solid mahogany, the walls being panelled with inlay in rosewood and satin wood, exhibiting the arms of the principal colonies. A kind of buffet screens a staircase, and is ornamented with a carving of the royal arms, with their supporters, coloured and gilt. Notwithstanding the deep tone of the panelling, the saloon is beautifully lighted, having square windows at the sides, and two skylights, a small one forward, and, aft, a large square well, panelled with pilasters, in exquisite taste. At the after side of the entrance from the stair are situated the pantry and galley, which, being on the same level and in such close proximity to the saloon, allow an arrangement to be made by which passengers may choose their own time, within certain limits, for taking breakfast, luncheon and dinner: an arrangement which works admirably.

We may descend either by the main staircase, or by the smaller stair at the forward end of the coffee-room, and find ourselves on the main deck. From the "companion" a passage leads forward between two screens of stained glass and maple panelling, opening in the centre to the two most characteristic rooms of the *Ormuz.* On one side we have the library, or writing-room, well furnished with books and convenient tables. The beautiful maple panelling of this apartment should be observed. The design, by Mr. Stevenson, makes the most of the graining of the wood. The books are specially selected, and are for the use of the passengers without payment.

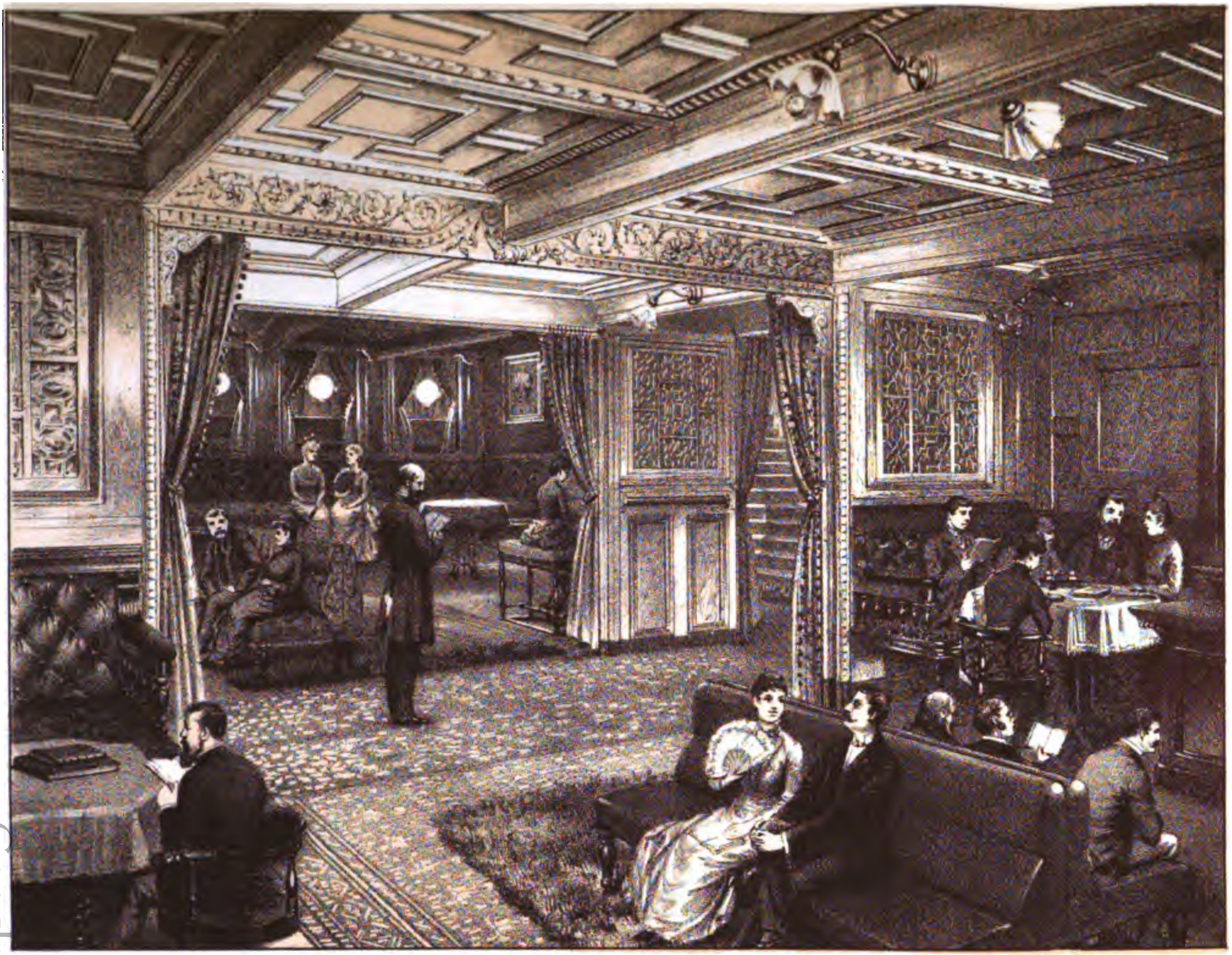
The principal apartment, one of the most striking features of the ship, is on the other side of the screen. This is the picture gallery, as it is sometimes called, or music-room. It is of the same size as the library, and furnished with a piano and

S.S. ORMUZ



DINING SALOON ON UPPER DECK

S S "ORMUZ"



DRAWING ROOM & LIBRARY.

an organ, and for the convenience of the performers in case of a play being acted, a favourite amusement on a long voyage, a door can be opened into the passage behind. The walls are adorned with the following original pictures:—

"The Lower Thames, Woolwich," by C. W. Wyllie.
"The Upper Thames, Windsor," by John O'Connor.
"The Old Squire," by J. Pettie, R.A.
"On the Coast of Banffshire," by Colin Hunter, A.R.A.
"Loch Achray," by J. MaçWhirter, A.R.A.
"Lisieux, Normandy," by Robert Dudley.

The cabins of the first saloon passengers are all forward on this the main deck, and away from the engines and boilers, the result being that in smooth weather the vibration of the screw is unfelt, and it is sometimes difficult to believe that the ship is moving through the water. The "state rooms" are neatly and prettily fitted with every convenience, a few being made for only one berth, others for two, and others again to hold a family. Each cabin has an electric bell, and an arrangement by which the electric light can be turned on and off at pleasure by the occupant.

The bath-rooms are unusually numerous, and hot water—not heated by steam—can be turned on, a great improvement, as the slightly greasy odour of the steam, and the noise made by it in warming a bath were equally unpleasant.

The second saloon is aft, the accommodation being superior to that in the first-class in a majority of passenger steamers. The panelling is specially worthy of notice. The second-class passengers have a smoking room of their own, and other conveniences which till lately were unknown in even the finest ships.

The third-class arrangements are also very complete, the object being both to insure the comfort of the steerage passengers, and also to avoid any annoyance to the travellers in the first and second saloons. The baths and washing rooms in the steerage, the open-air tables and seats, the ample space for each individual, and the care taken to provide for the needs of families are the same in the *Ormuz* as in the other ships of the Line.

When we pass from the *Ormuz* to the *Orient* we find certain differences, chiefly of plan and of decoration. Here, we have a sitting-room on the hurricane deck, a beautiful drawing-room on the upper-deck, of an oval form, with a kind of well looking down into the saloon, is furnished with a piano and an organ; and on Sundays when service is read in the saloon below, the choir sings in the chamber above with a very pleasing effect.

Aft of the drawing-room, on the same landing, are two very large state cabins, each furnished with a four-post bed handsomely draped with damask. A luxurious smoking-room is provided on the hurricane deck.

The saloon in the *Austral* is a magnificent chamber, designed by Mr. Stevenson. It measures about 40 feet each way, and will hold about 120 people at dinner together. The sides are in walnut, panelled with beautiful carving, and the columns which support the roof, with the pilasters which decorate the sides, are of an old English pattern. In some of the ships heraldry has been called to the assistance of architecture, and the arms of the Mother Country and of the Colonies, carved and coloured, sometimes with inlaid wood, are displayed on each side. In all the Arms of the Company may be found with their lion and kangaroo supporters, and the mysterious motto:—

PAR NON LEONINA SOCIETAS,

which seems to indicate a belief that the advantages of the connection between England and Australia are and ought to be mutual and not one-sided.

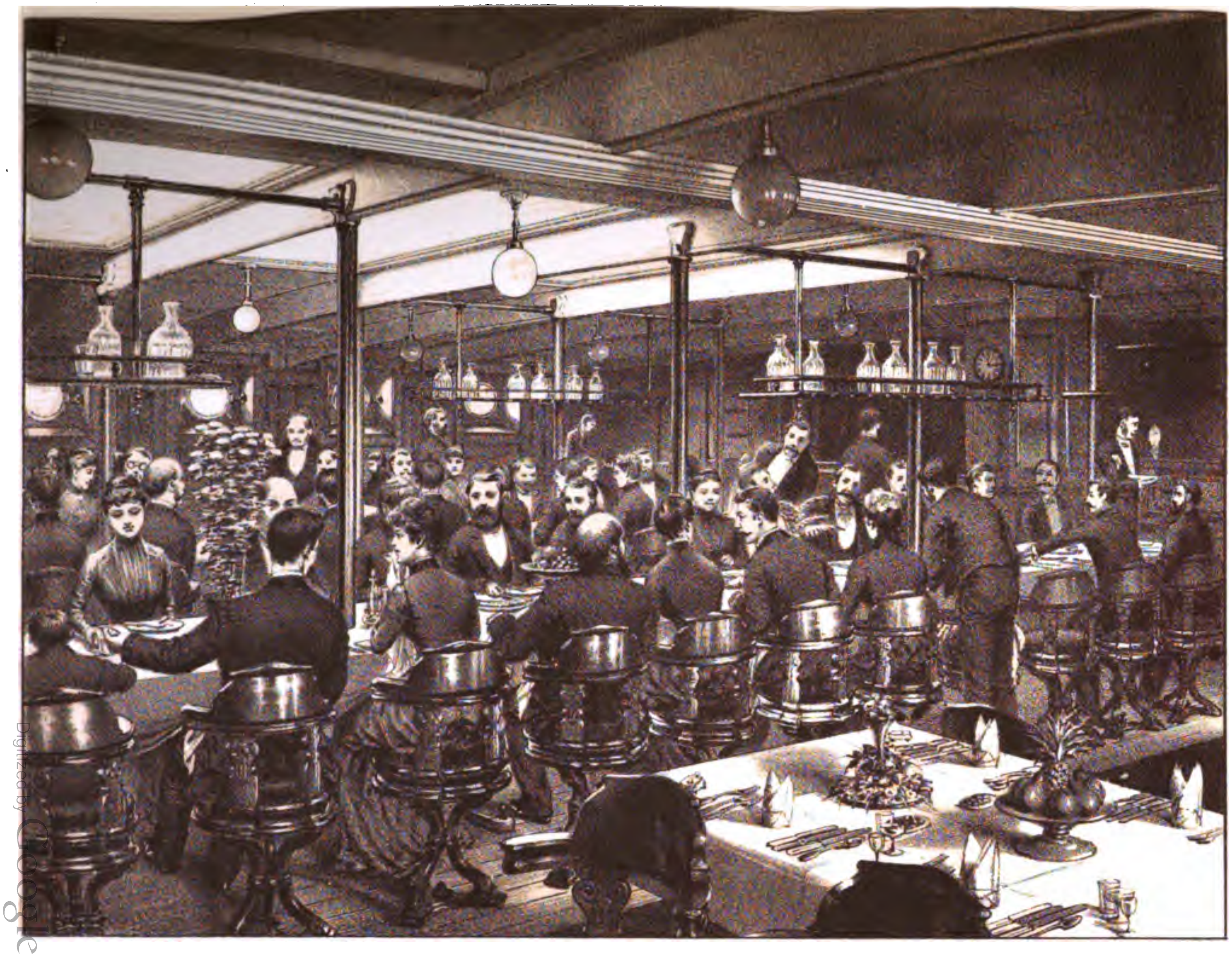
In the *Austral*, the drawing-room has no central well, but in most respects the arrangements are similar to those in the *Orient*. In the *Orizaba* and *Oroya*, again there is a central well, but it is glazed in, with panels of looking glass at intervals. In all the ships of this class great care has been taken that even the smallest detail of ornament shall be complete and perfect, and that, at the same time, nothing shall be glaring or inharmonious.

Lighting by electricity as an additional means of comfort and safety has been applied to all the vessels in the Orient Line. The small delicate pear-shaped lamps, known as *Incandescent*, which are distributed all over the interior of the steamers, require neither trimming nor lighting; oil, wicks, smoke, and all resulting odours are therefore abolished. The present pretty illuminators are simply connected with properly and carefully insulated wires along which the electric current is allowed to pass to and from the revolving dynamos.

There are two ways of producing electricity, viz., by chemical action or by mechanical action or friction: the latter is the method here used. The electric current is generated by independent machinery fixed in the engine room, which sets in motion a dynamo electric machine, a contrivance for converting mechanical energy into electric energy. The current is led from the dynamos to the various lamps along insulated wires.

This electric current is worked at a very low tension, so low that its presence

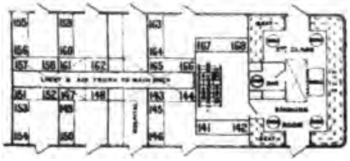
S S "ORMUZ"

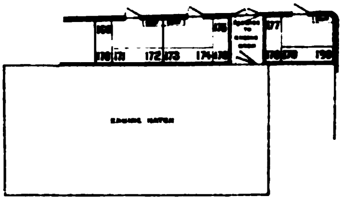


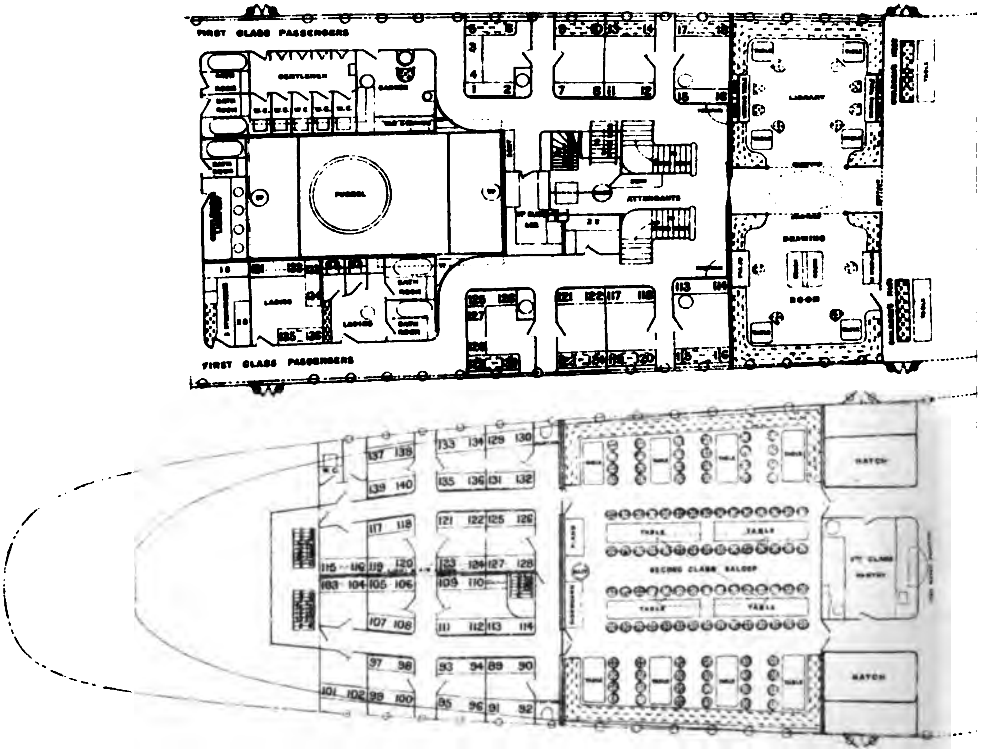
SECOND SALOON.

S. S.

2ND CLASS DECK HOUSE AFT.







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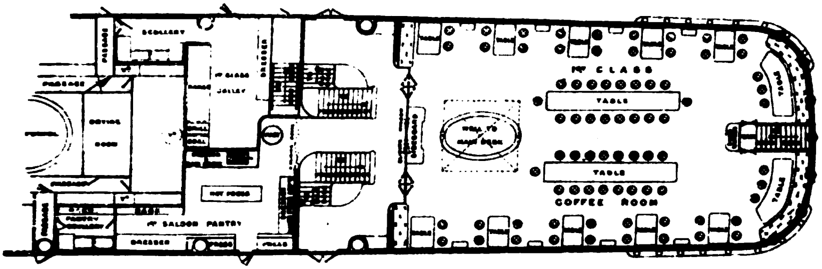
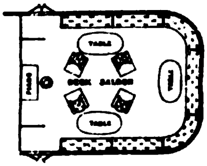
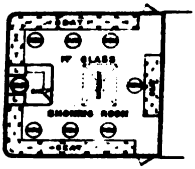
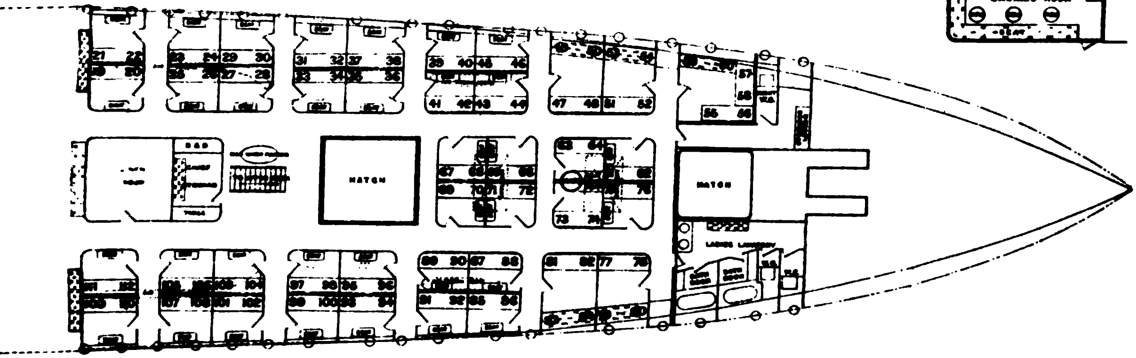
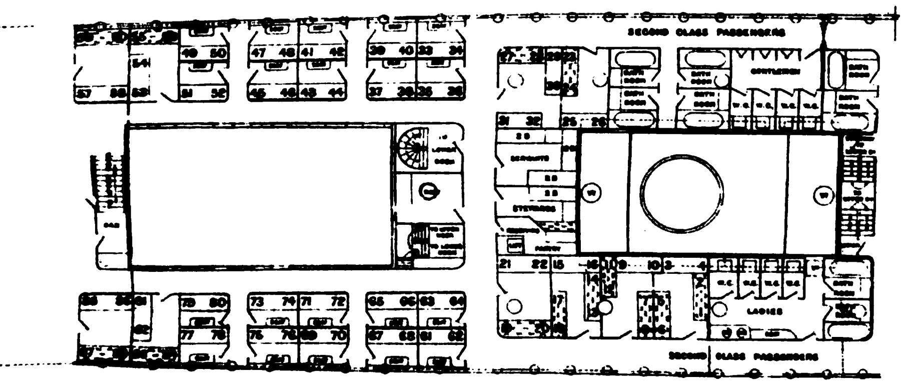

SCULLERY
PASSAGE
1ST CLASS GALLEY
DRESSER
1ST SALOON PANTRY
HOT PRESS
1ST CLASS
COFFEE ROOM
TABLE
TABLE
TABLE


DECK SALOON
TABLE
TABLE


1ST CLASS
SMOKING ROOM
SEAT
SEAT


HATCH
HATCH
LADIES LAVATORY


SECOND CLASS PASSENGERS
GENTLEMEN
BATH ROOM
SERVANTS
STEWARDS
LADIES
SECOND CLASS PASSENGERS
W.C.
BAR

could scarcely be detected even if it were possible to take hold of the bare conductors with uncovered hands.

The lamp consists of a fine thread of carbon inclosed in a glass bulb from which air has been totally excluded. This thread of carbon offers a very high resistance to the current passing through it; the result being that the energy is expended in raising the thread of carbon to a white heat. The permanence of the carbon is dependent on the total absence of oxygen; should the glass bulb be broken oxygen is of course admitted, and the carbon thread is immediately destroyed by combustion.

All the lamps are arranged so that they can, either singly or in groups, be turned off and on at will, by means of switches: bridges of metal, fusible at a low heat, being inserted at different places along the wires. All risk of fire from a short circuit producing high tension is thus obviated, and various other precautions are taken which render the electric light the safest from every point of view for a passenger steamship. The total absence of smell or smoke, the steadiness unaffected by the motion of the ship, combined with superior brilliancy, give to the electric light a special value over any other means of illumination.

The principle on which the freezing chamber is contrived is one of the most curious examples of the application of a scientific theory to a practical purpose. To endeavour to explain it in unscientific language let us state what has long been known that a certain quantity of heat, a quantity perhaps not to be felt, is in all air. This heat keeps the air at a certain bulk, and the more heat there is the more the air expands. This is, of course, within the experience of every one. To make use of the fact for refrigerating purposes, air is pumped into a chamber, and so compressed. The temperature of the compressed air rises. The latent heat, that is, becomes active. This is got rid of by circulating cold water through it; the water of the sea is cold enough; and the compressed air parts with its heat to the water. It is then liberated, but to attain its ordinary volume or bulk it must have back the heat it has parted with to the water. It tries to get heat from everything it comes in contact with. Any particles of moisture it encounters fall in snow before its chilly breath. When meat and vegetables are placed before it any heat they contain is taken from them, and they become frozen. This is the principle of the refrigerator, and its application, with the help of an engine to compress the air and work the circulating pump, is merely a matter of detail.

The following more strictly scientific description of the lighting and freezing machines, as also of the main engines, is furnished by Mr. Andrew Brown, the Orient Company's Superintendent Engineer.

The electric light is now employed for illuminating purposes in all the steamers of the Orient line. A short account of how the light is produced and the appliances connected with it may not be uninteresting to the reader.

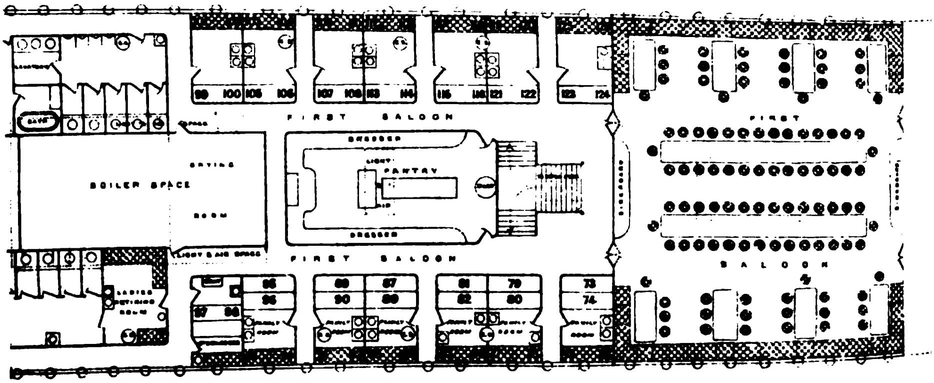
Chemical batteries were formerly the only means by which an electric current could be generated, and for doing work on a large scale were unsuitable. They are, however, still used on shipboard to supply the current for the electric bells. On the discovery by Faraday in 1831 of the law of induction, Pixii invented the first Magneto Electric Machine, which is the parent of all machines of this class. But Magneto Electric Machines have in their turn been almost entirely superseded by Dynamo Electric Machines, the difference between the two being that whereas in the former permanent steel magnets are employed to form the magnetic field, in the latter the field magnets are made of soft iron cores with coils of wire wound round them, through which part of the current from the armature flows when the machine is at work, and forms a field of any required intensity. The armature which revolves between the poles of the field magnets consists of layers of thin iron, or coils of iron wire forming a core or centre piece, over which copper wires are wound which conduct the current to the commutator where it is taken off by the brushes to the different circuits. The action of the machine is as follows:—At starting, a trace of magnetism in the iron cores of the magnets is sufficient to induce a weak current in the coils of the revolving armature. This current is conducted round the wire coils of the magnets and strengthens the magnetic field, which again induces a stronger current in the armature; and this process goes on until the field has obtained the required intensity, when the circuits supplying the incandescent lamps are brought into connection with the commutator.

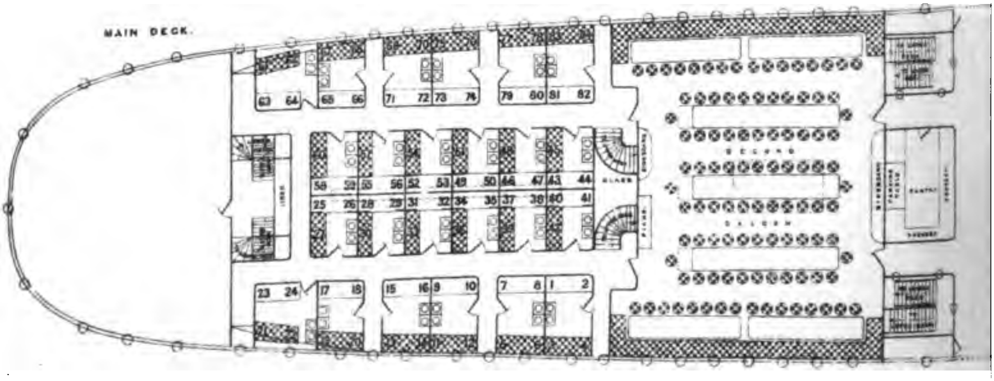
For conducting the electric current to the lamps, copper wires insulated with gutta percha are led from the machine, and in some of the ships of the fleet as much as eight miles of wire are used for this purpose. The Company's steamers now use electric search lights of 20,000 candle-power, which enable them to perform the passage of the Suez Canal by night, and thus by not requiring to wait for daylight, they can make the voyage to Australia in a shorter time.

The refrigerating apparatus plays an important part in passenger economy on board the ships of the Orient Line. In specially constructed chambers, meat and vegetables can be kept for any length of time without damage, and the passenger of all classes has fresh food at all times without the disagreeable odours which used to accompany the live stock pens in use before the machines were fitted. The principle on which the freezing chamber is contrived has been explained familiarly above. The water of the sea, at its ordinary temperature, is found quite cold enough

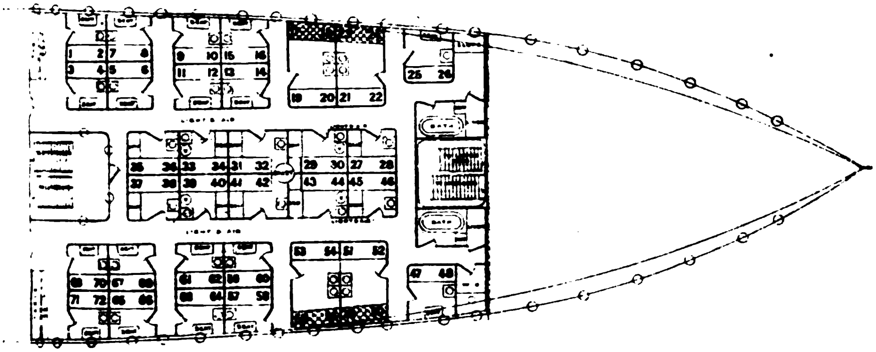
S.S. "ORIZABA" & "OROYA".

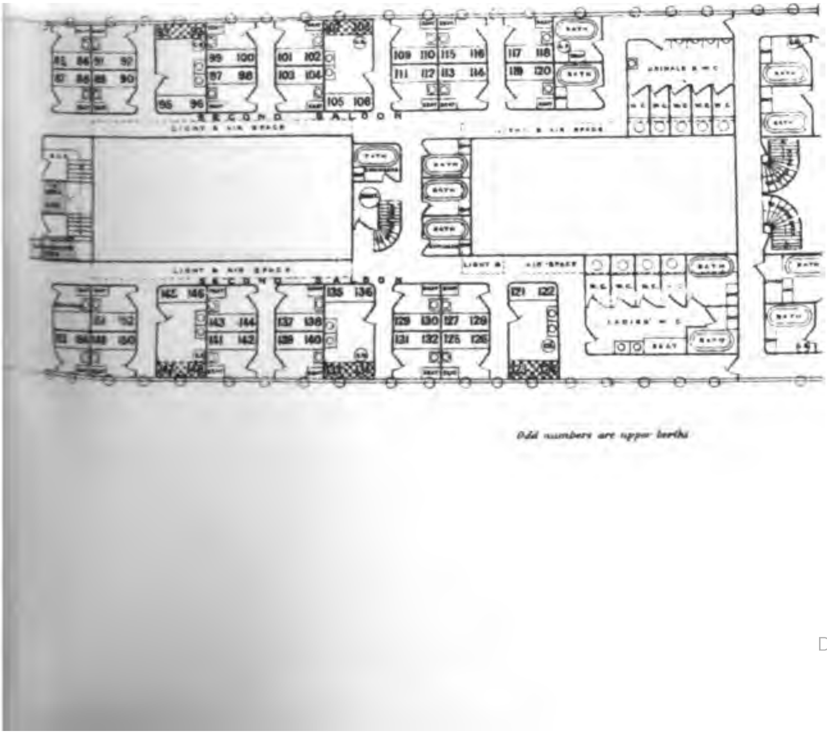
S. S. "ORIZABA"


FIRST SALOON
BOILER SPACE
DRYING ROOM
PANTRY
DRESSER
LADIES RETIRING ROOM
FAMILY ROOM
FIRST
SALOON


MAIN DECK.
SECOND
SALOON
PANTRY

&"OROYA"





Odd numbers are upper berths

for the purpose: and cold is generated artificially with as much ease and exactness as heat. The freezing chamber can, at will, be cooled down to any point that may be required. The compression and expansion of the air are effected by machinery. In the earlier refrigerating apparatus for producing cold, salts were used, and in conjunction with water and acids, were circulated through pipes in the storage chambers, but these methods have been entirely discarded in favour of freezing by cold air, which besides being less costly, is much more easily adapted for use on ship board.

Before the air is in a suitable condition to be discharged from the machine into the chambers, it has its heat subtracted from it during four successive stages. In the first of these it is drawn from the atmosphere into the compressing cylinders, where it is compressed to one-fiftieth of its original volume, being at the same time cooled by jets of water playing into the cylinders. At this pressure it is led to a water tower, where it is mixed with water from a spray, which further reduces it in temperature, after which the moisture which it has acquired is taken from it in a series of drying pipes, surrounded by air returning from the chambers. The compressed air thus cooled and free from moisture, goes then to the expansion cylinders, where it gives out during expansion part of the work expended in compressing it, in helping to drive the machine. It is then in a condition to enter the storage chambers at a temperature of about 80 degrees below zero, Fahr., or about 120 degrees of frost, and entirely free from moisture.

Besides preserving fresh meat and vegetables, sweet milk and fresh butter are stored for use when wanted, wines are cooled before being supplied, and large quantities of ice are daily made for passengers' requirements in hot weather.

From Australia, 5,000 to 10,000 carcases of mutton can be brought to the London Market in the insulated cargo chambers of each steamer, while lately, fruits of various kinds have been successfully carried during the hottest season of the year.

The main engines of most of the steamers of the line are on the triple expansion principle, in which the steam is expanded successively through three cylinders before passing to the condenser, and as each cylinder works on a separate crank, the vibration, even at full speed, is hardly perceptible. The propellers have four blades, which also tends to reduce the vibration in the extreme after-part of the ship.

The propeller and crank shafts are of steel, all having such a degree of strength as to render a breakage in mid-ocean most improbable. Steam of much higher pressure than was possible a few years ago is used, the boilers being constructed to carry 150 pounds on the square inch. To withstand this pressure the boiler-plates are made of steel, and each boiler weighs upwards of sixty-five tons. In some of the steamers there are six of these boilers with thirty-six furnaces.

Hydraulic machines, noiseless in their action, are largely used for various purposes throughout the *Ormuz*, viz.: for loading and discharging cargo instead of steam winches, for steering the ship, working the anchors and hawsers, and for hoisting the ashes from the stoke-holes. The ashes are forced through tubes through the side of the ship below the main-deck, overcoming what is ordinarily an annoyance in passenger steamers.

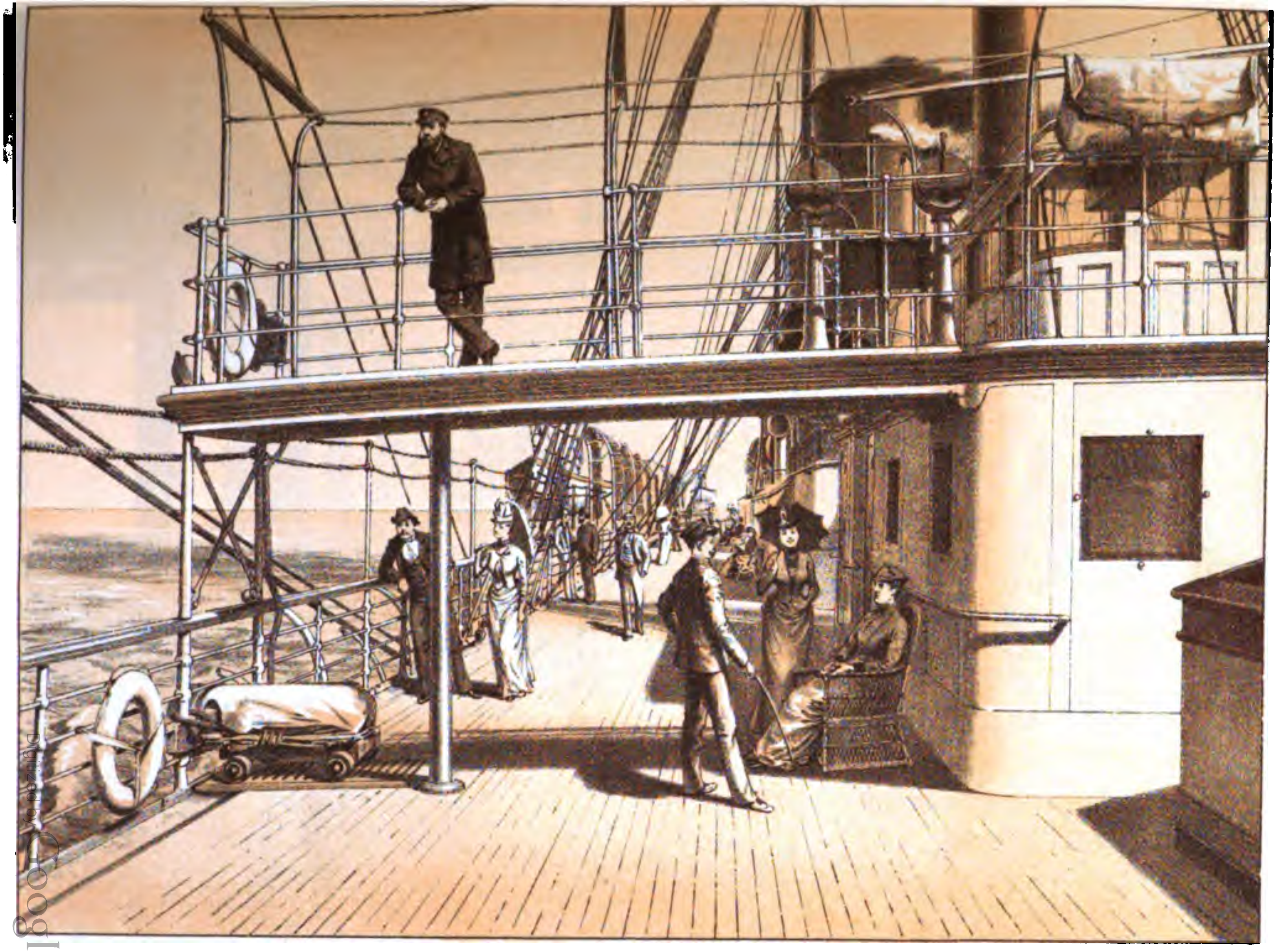
The power of the pumps in the *Ormuz* is a specialty. There are two centrifugal pumps with independent compound engines. These pumps are placed high up in the engine-room, and have connections to the bilges, and are capable of discharging 4,500 tons of water per hour. A centrifugal pump is also fitted for pumping in or discharging water ballast with connections to the bilges. Besides these, there are pumps for feeding the boilers, supplying the water for baths and sanitary purposes, washing decks, for use in case of fire, and pumping fresh water for daily use. These being all placed well up in the ship are always workable, as steam is available to drive them from the donkey boiler, which is above the height of the main-deck, even if water should get into the lower stoke-holes and put out the fires of the main boilers. The total pumping power of the whole is close on 6,000 tons per hour.

The models of the engines of some of the Company's steamers have won gold medals at the Sydney and Melbourne Exhibitions.

Intending voyagers, especially those who have not been at sea before, may wish for some general notes of advice. Health at sea is treated of by Dr. James Struthers, who has had considerable experience in medical charge of some of the Company's steamers, in a separate chapter, and it will be sufficient here to mention only those things which conduce to comfort and convenience.

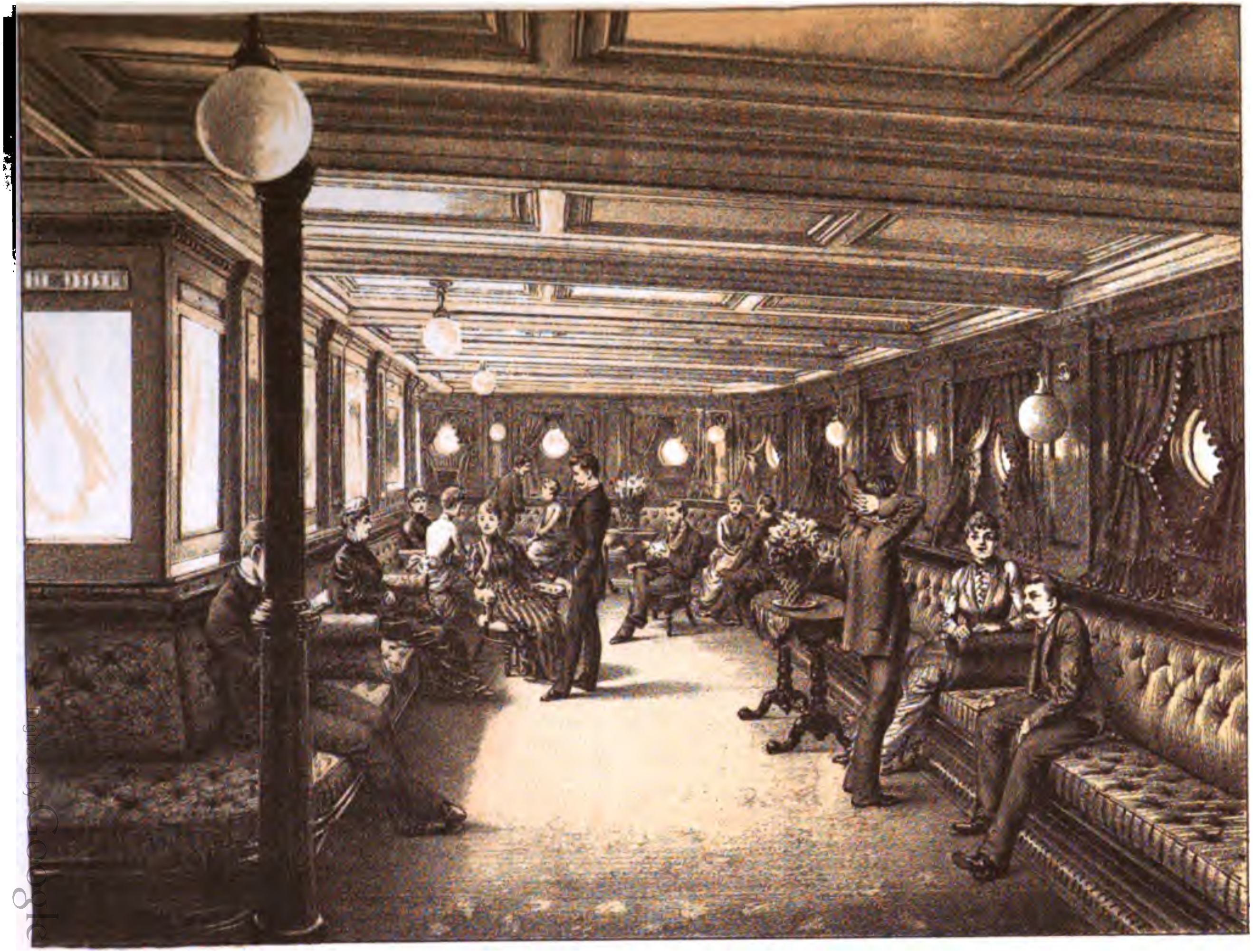
It is wise to take as much exercise as possible. The best preventive of sea-sickness is to keep the extremities warm. While the ship is in temperate latitudes, therefore, it is essential to walk, or in some other way—perhaps by playing one of the many delightful deck games—keep in motion. As wet decks are inevitable, strong boots, or shoes with corrugated india-rubber soles, should be worn. In passing from the warm regions beyond the Suez Canal, it is well to be careful for the first few days especially. The change from Port Said to the Mediterranean is always very great. In the tropics most people find flannel the best kind of clothing, and those who have not encountered the damp steamy temperature of the region round Aden can have little idea how trying it is, even when the thermometer is not very high. Supplies of clean clothes are very

S.S. "ORIZABA" & S.S. "OROYA"



PROMENADE DECK.

S S. "ORIZABA"



MUSIC SALOON.

necessary on a voyage, and the absence of a laundress, though it has its advantages, is apt to leave an inexperienced voyager in want.

In the cabin it is well to have as few heavy boxes as possible, and none that cannot be put under the sleeping berth. As once a week, at least, every passenger has access to his heavy luggage, this need cause no inconvenience. An arrangement of linen bags or pockets is useful, to contain not only brushes and combs, but any kind of article which ashore would lie on the dressing table. We must remember that even the largest ships occasionally pitch and roll in a heavy sea, and things left about loose are likely to be lost or broken.

Male passengers will do well to be provided with dressing suits, which with a cloak or overcoat can be worn on deck in the early morning. When two or more are in the same cabin, it may save much inconvenience, as one or other can then wait and carry out his dressing operations when the cabin is vacant. Ladies will find dressing gowns, and what are called "tea gowns," very convenient in the tropics.

To most passengers the possession of a deck chair is very desirable. It should be plainly marked with the owner's name, in a conspicuous place, not on the back. A whole row of ladies may be disturbed because their names are on the backs of their chairs, and someone is looking for his similarly distinguished property. A chair that is not injured by being wet is the best. The common canvas deck chair is one of the worst, as it is not easily dried. Either a wooden seat, or a canvas seat that can easily be removed and taken below, should therefore be used.

With regard to employment on a long voyage it is scarcely necessary to say much here, especially as this book is written for the purpose of employing the minds of passengers on the various scenes and associations of the successive phases of the voyage. But a good many people find reading on deck, in the wind and the sun, by no means an attractive pursuit. To them it is useless to offer any advice on the choice of a subject for study; but, unquestionably, there are many passengers who find that a subject which seemed dull and dry at home might be interesting at sea, where, for days together, there may be no distractions.

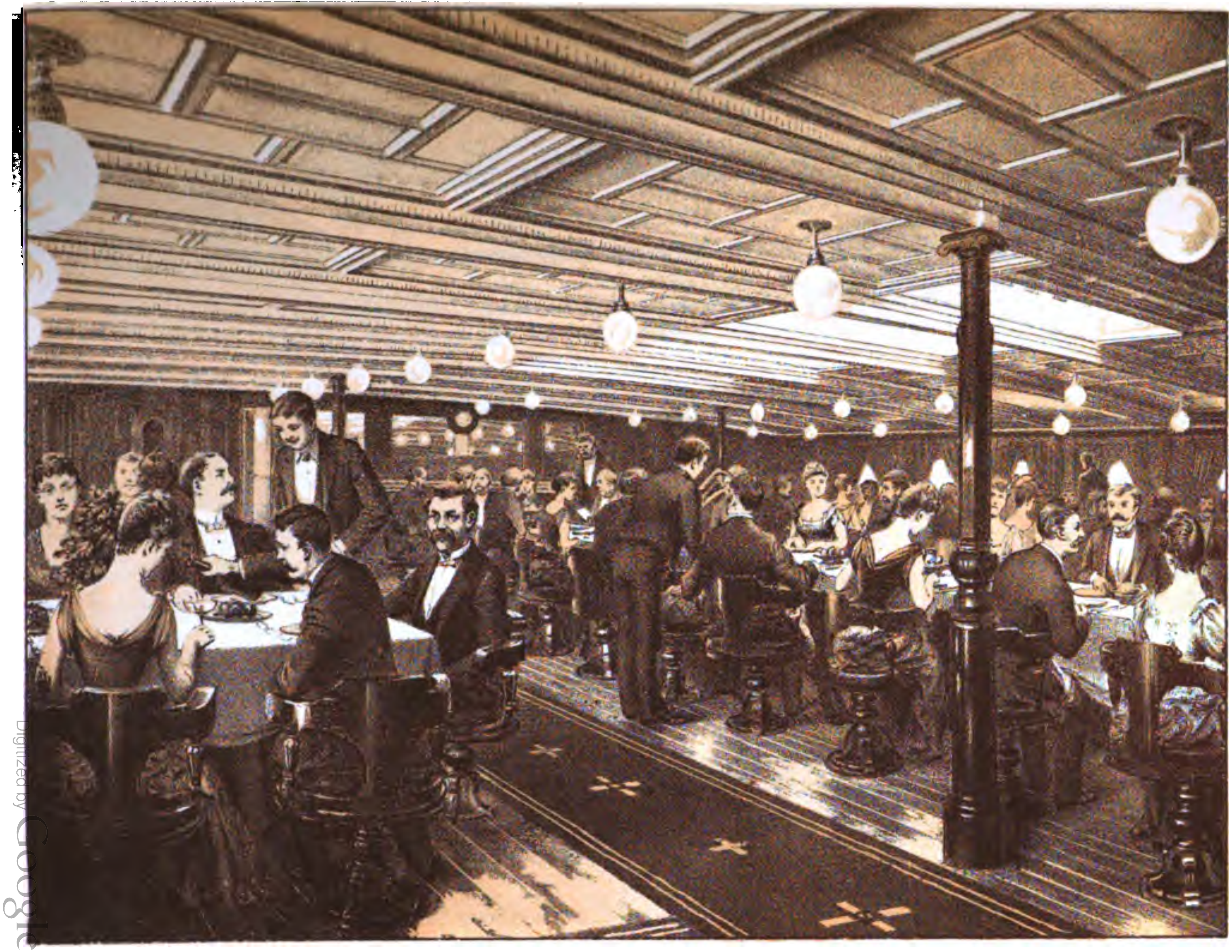
To those who do not read much, and to some who do, the various games invented for the amusement of idle travellers, are not without a use as well as mere amusement. To get sufficient exercise without monotony, the tramp, tramp up and down and round the deck may be varied by athletic sports, which are usually got up by an "Amusement Committee," who gather subscriptions for the purpose of giving prizes, the residue, if any, going into some charitable fund. Cricket is often played, and may be made a very exciting game, a netting being hung to catch the balls. This is often done when a famous team is going to, or coming from, Australia. Quoits formed of rings of stout rope may be thrown into buckets at a certain distance and other games may also be played with the rings. Among the best deck games is "shovel board," which is played with wooden discs and long-handled cues, resembles the Scottish winter sport of curling, or the old English bowls. A still better game is "dumps," or as it is more commonly termed, "bull." A board is painted with numbers in the following order:—

B	10	B
8	1	6
3	5	7
2	9	4

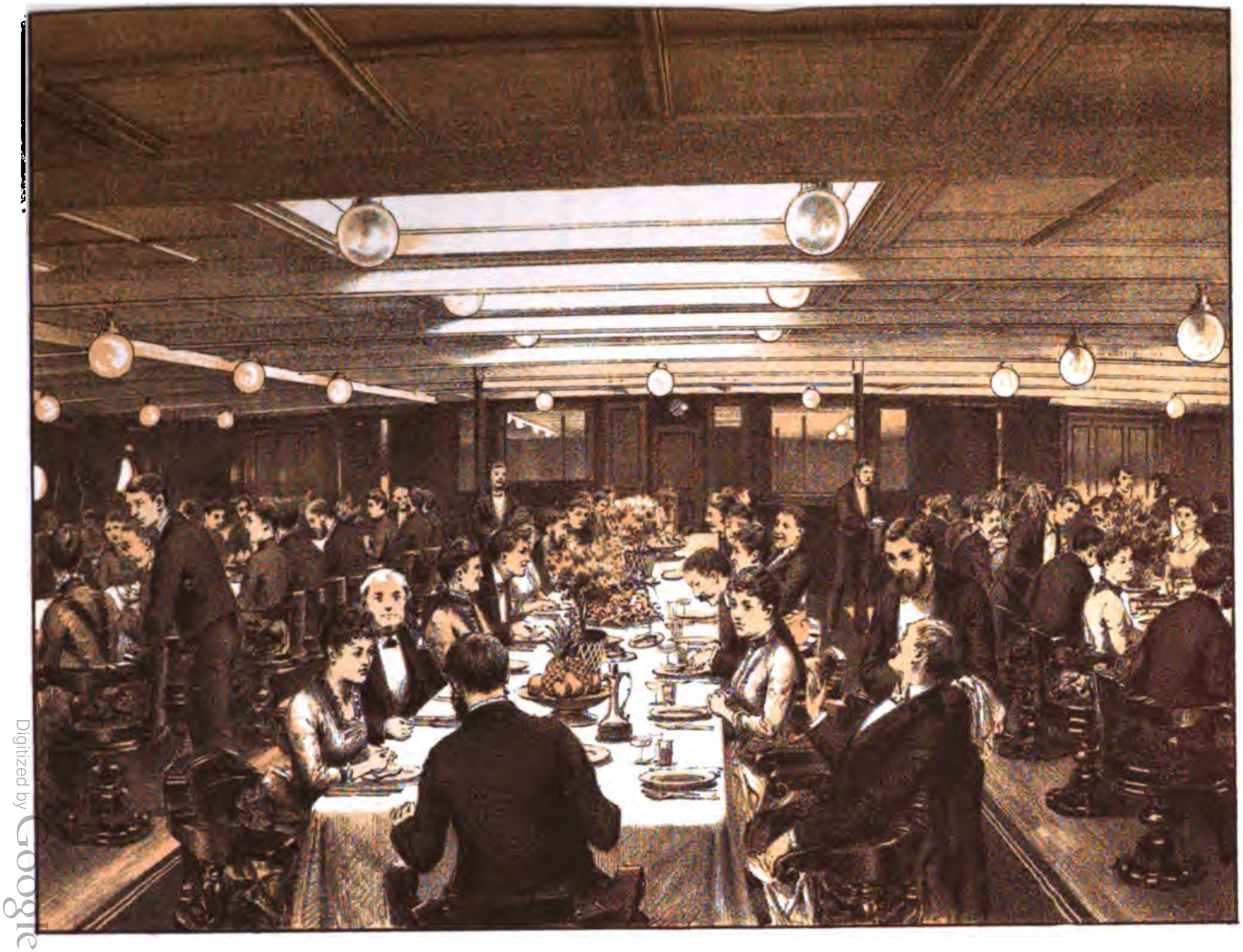
The two corners are filled with bull's heads, sometimes simply with B's. The game is to throw a leaden or india-rubber quoit on the highest possible number, avoiding the lines which divide the squares. If the unhappy player throws on the bull's head, ten is deducted from his score. Some more scientific players do not throw for the highest score, but take the squares in rotation from 1 to 12, counting the bull's heads as 11 and 12, and with six quoits for each turn it is amazing how many shots are required before some of the more difficult squares such as 2 and 4 are reached.

Sketchers are not so often seen on board ship as might be expected. Yet, if we remember that except for two days at most in the Bay of Biscay, we are hardly ever out of sight of land for more than a few hours until we get past Aden into the Indian Ocean, we can understand how much material there is for interesting drawings. When land is invisible there is the scenery of the sea; the forms of waves and their colour; the reflection of the clouds above; the sunrise and the sunset; the moon in her phases; all these things will furnish the artist with subjects. It may be worth while to

S.S. "ORIZABA" & S.S. "OROYA"



FIRST SALOON.



SECOND CLASS DINING SALOON.

mention here that the most vividly blue sea is to be met with off Candia, where the passenger who has made notes of colour in other places, say at Gibraltar and Naples, will find his palette beggared by the intense sapphire and turquoise of the waves.

It will be well to remind readers voyaging for the first time, that in a ship every one is dependent on someone else for the comfort and happiness, or misery and and wretchedness, of the voyage. Mutual forbearance must be constantly practised, and each passenger must remember that by a little want of consideration he may inflict extreme discomfort, not to say torture, on someone who has the misfortune to be his neighbour. People who cannot play are very fond of strumming on the piano. At home probably this matters little to anybody: on board ship it may annoy hundreds. Various other examples might be mentioned, but we may let this one suffice.

Another thing should also be remembered. During a voyage the commander of the ship is, and must be, autocratic. The law upholds his authority. The safety of the ship depends on it, and not only that, but the social intercourse of the passengers, for the captain has power, and has been known to exercise it, to exclude from the saloon a passenger who, in his opinion, had acted in a manner "unbecoming a gentleman." The captain must also take all measures necessary to insure that no passenger shall interfere with the discipline of the ship, or impede the officers and crew in the execution of their duty. In the discharge of his office the captain of a large passenger steamer has many different and, at first sight almost incompatible, kinds of work to do; he is not only responsible for the course, and for all the scientific arrangements of the complicated machine which he controls, but he has also to act as civil governor or magistrate over the community. He is bound to have as much thought and consideration for the poorest emigrant, as for anyone on board. Under these circumstances he is entitled to something more than the mere forbearance of the voyagers: he deserves their sympathy. They owe it to him to avoid troubling him about matters of little moment; or disturbing him when, after passing a long and anxious night on the bridge, he has sought a little well-earned repose. The captain, among his multifarious duties, is expected to read service on Sunday morning, but it is seldom that a clergyman may not be found on board to relieve him. He and his officers have passed severe Board of Trade examinations to fit them for their posts, and most of them, and also many of the "hands," belong to that kind of marine militia known as the Royal Naval Reserve.

In one of the subsequent chapters (Chap. xv.) will be found some notes on the subject of seamanship and navigation, from which the reader will be able to gather a clearer idea of the intricate and accurate scientific processes necessary on the part of the captain to guide his ship and those entrusted to his care "to the haven where they would be." In other chapters will be found topographical notices of the principal places visited in the course of a voyage to Australia, the course from Aden to Albany being made the occasion for an account of the natural history of the sea, and of that which lies beneath its waves; the volume concluding with an account of the Australian Colonies.

NOTES ON THE NAMES OF THE SHIPS OF THE ORIENT LINE.

"AUSTRAL" as the name of a ship is, of course, a reference to the southern hemisphere. We say Austral-Asia, meaning "Southern Asia," and the "Austral signs" of the Zodiac, meaning the last six.

"CHIMBORAZO" is a volcano in the South American state of Ecuador, and is situated in latitude 1° 30″ S., and longitude 79° 2″ W. It rises to a height of 20,000 feet, and is the highest mountain in the new world.

"CUZCO" is the ancient capital and still one of the chief cities of Peru. Before the recent destructive war with Chili, it had a population of 40,000. It is in latitude 13° 30″ S., and longitude 71° 20″ W.

"GARONNE" is the name of the great French river on which the city of Bordeaux is situated.

"IBERIA" is the classical name of Spain.

"LIGURIA" was a province of ancient Italy, answering to the modern Riviera and Genoa.

"LUSITANIA" is the ancient name of a Spanish province, nearly answering to the modern kingdom of Portugal.

"ORIENT" means literally "rising," and refers to the East:—

> "Morn in the white wake of the morning star
> Came furrowing all the Orient into gold."—TENNYSON.

"ORIZABA" is the name of a mighty mountain on the chain of the Andes in Mexico, about seventy miles inland from Vera Cruz. It is in latitude 18° 50″ N., and longitude 97° 0″ W. It rises to a height of 17,367 feet, and its snowy summit is visible 200 miles away at sea in clear weather. It is a volcano, but has been inactive since 1856.

"ORMUZ" was the great emporium of eastern trade in the middle ages: a summary of its history, and an account of its present condition will be found in chapter xiii.

"OROYA" is the name of the mountain between Lima and Callao, in Peru, over which runs a famous zig-zag line of railway, connecting the capital and the port.

CHAPTER II.

MEDICAL ASPECTS OF THE VOYAGE.

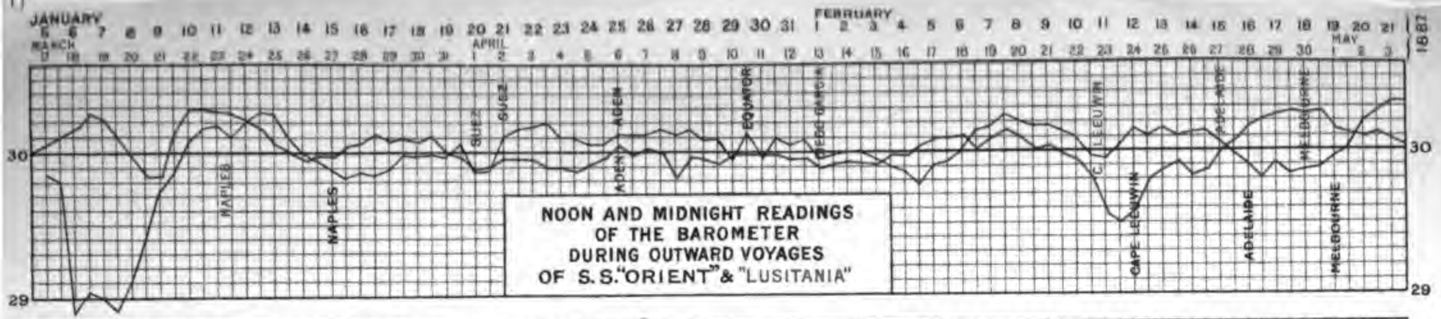
CLIMATE ON THE OCEAN.—AILMENTS SPECIALLY INFLUENCED.—HOW TO OBTAIN THE FULL BENEFIT OF THE VOYAGE.—CLOTHING.—SEA-SICKNESS.

THIS chapter has been written specially for the third edition by Mr. JAMES STRUTHERS, Jun., M.B., and is the result of considerable experience as Medical Officer on the Company's vessels :—

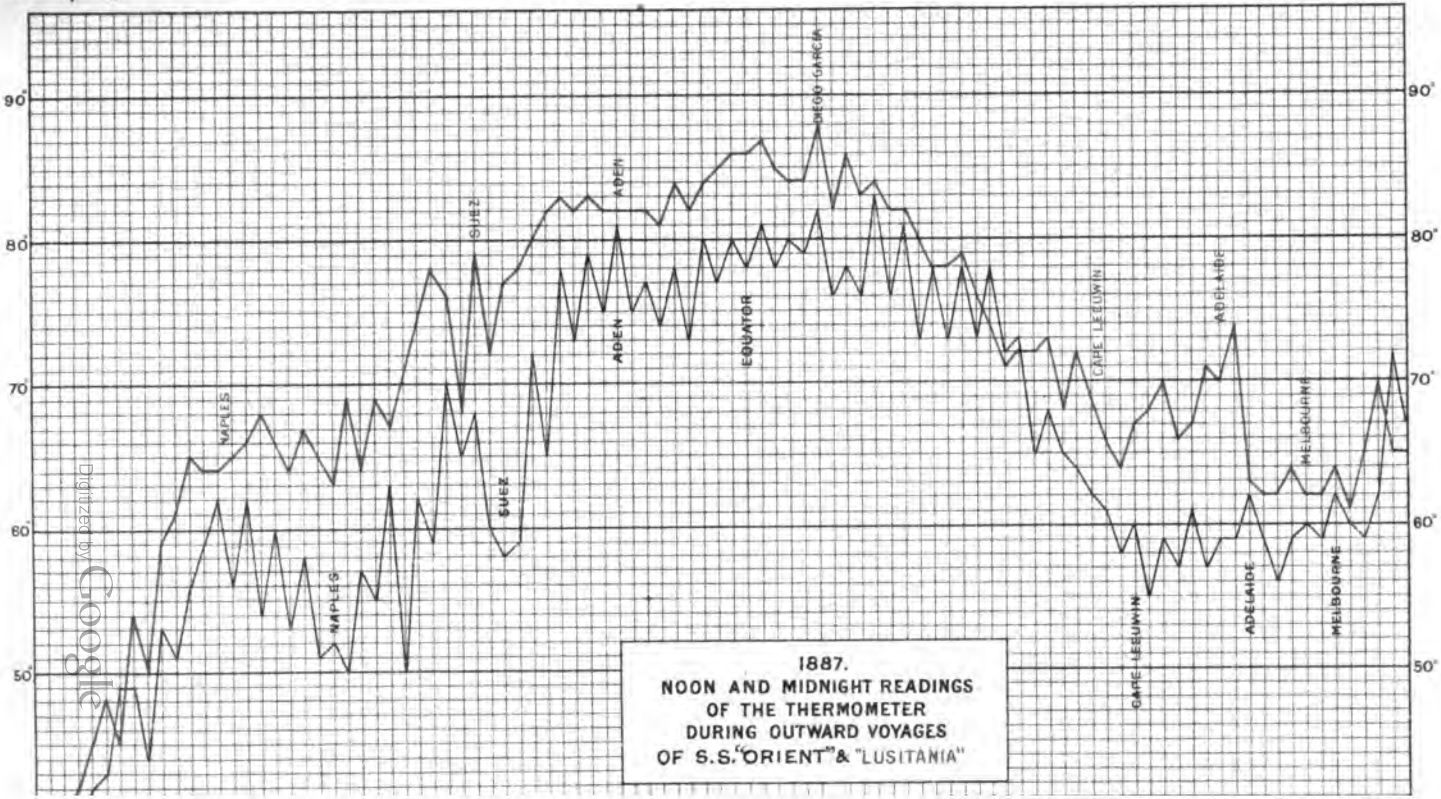
It is to be understood that although most of the following observations apply to long sea-voyages in general, they have been compiled with special regard to the voyage to Australia in a modern steamship. A medical man who estimated the hygienic conditions on a great liner from an experience, say, of coasting or excursion steamboats, would go far astray. The passenger is no longer harassed by "dust and dirt," by the "odour of oiled machinery," or by the "ceaseless grind of the engines and vibration of the screw." And again, without depreciating the advantages of a fine sailing-vessel, it is to be noted that on the steamship there is much less monotony of diet, less preserved food, less tediousness, and no liability to be becalmed many days in a trying atmosphere.

We shall first review the differences between the sea and the shore life, principally with respect to climate; secondly call attention to certain ailments likely to be specially benefited by a voyage, and to others in which the opposite is the case; thirdly, what is most important, point out the measures to be taken by those who desire to make the most of the voyage; and lastly, conclude with some remarks on sea-sickness.

There are many differences between the life at sea and the life ashore. The conditions of life at sea afford, and indeed compel, one change which is the chief secret of its value. English people spend as a rule less than three hours daily in the open-air; they spend many hours daily in the partially contaminated air of the house or place of business, including four to six hours most evenings in the noxious atmosphere of a gas or a lamp-lighted apartment. The same persons at sea spend



NOON AND MIDNIGHT READINGS
OF THE BAROMETER
DURING OUTWARD VOYAGES
OF S.S. "ORIENT" & "LUSITANIA"



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NOON AND MIDNIGHT READINGS
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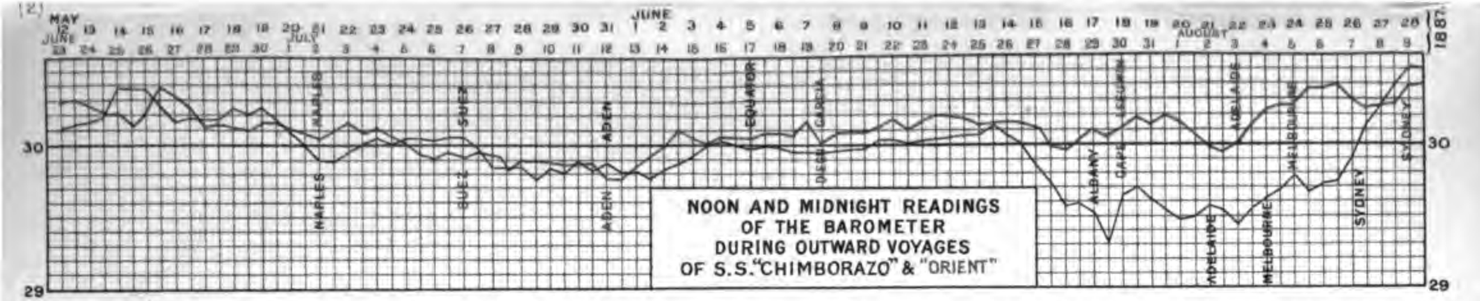

NOON AND MIDNIGHT READINGS
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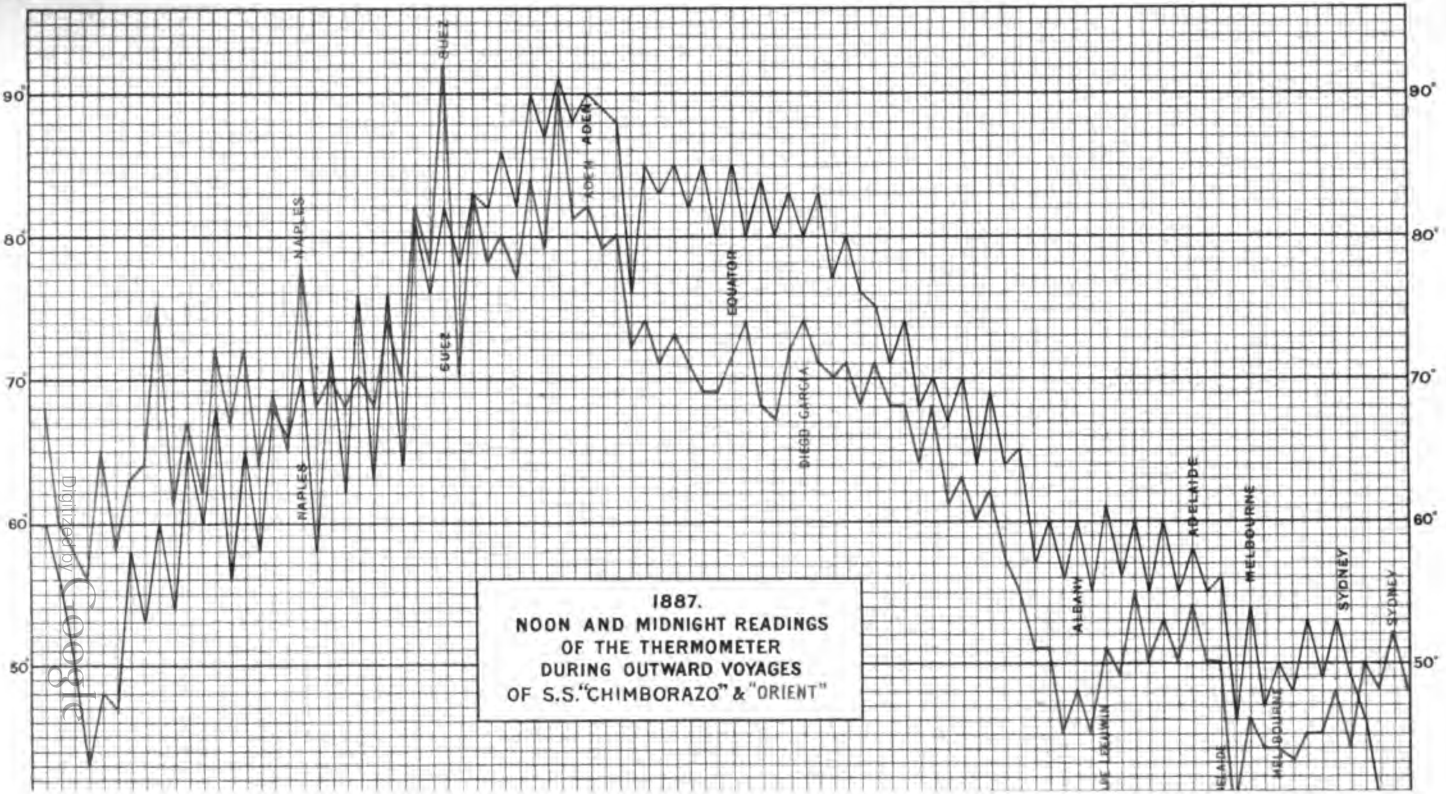

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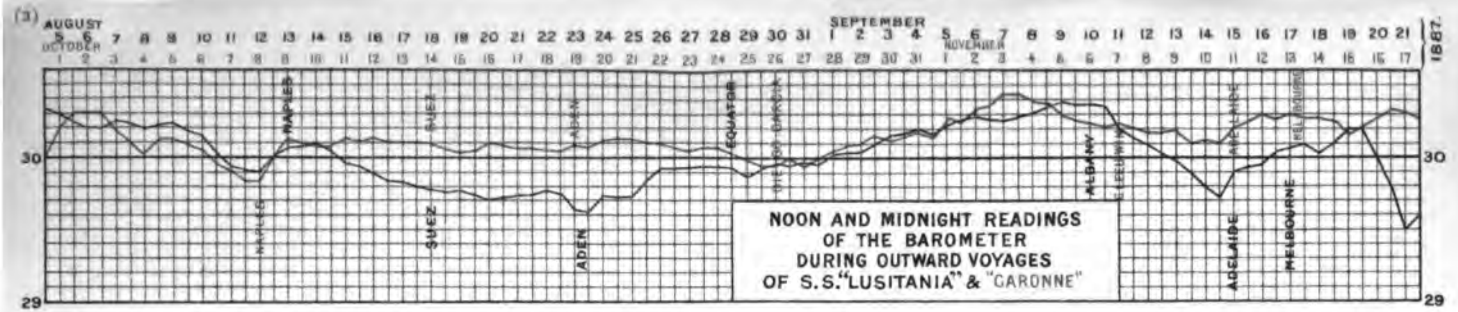

NOON AND MIDNIGHT READINGS
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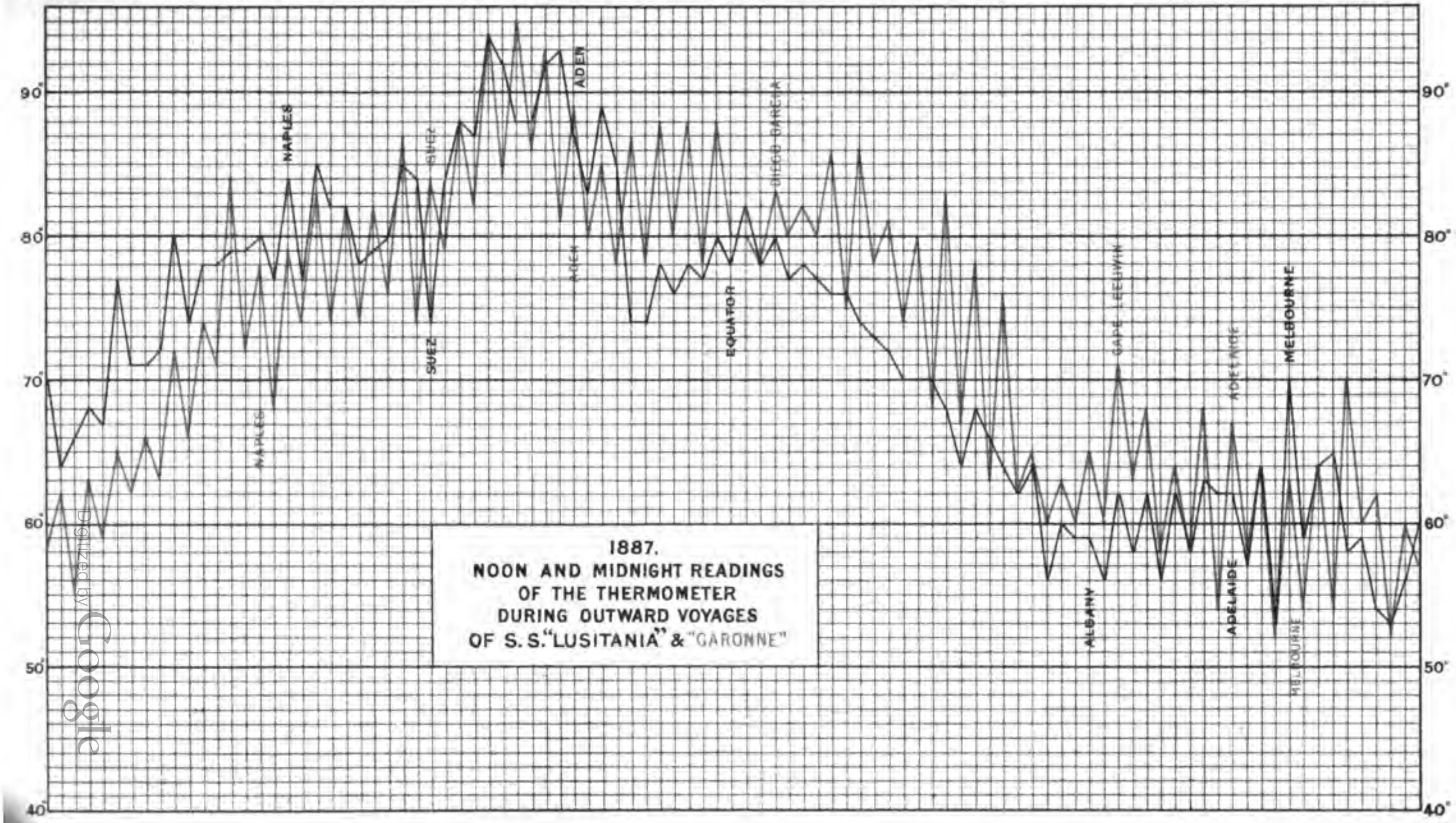

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NOON AND MIDNIGHT READINGS
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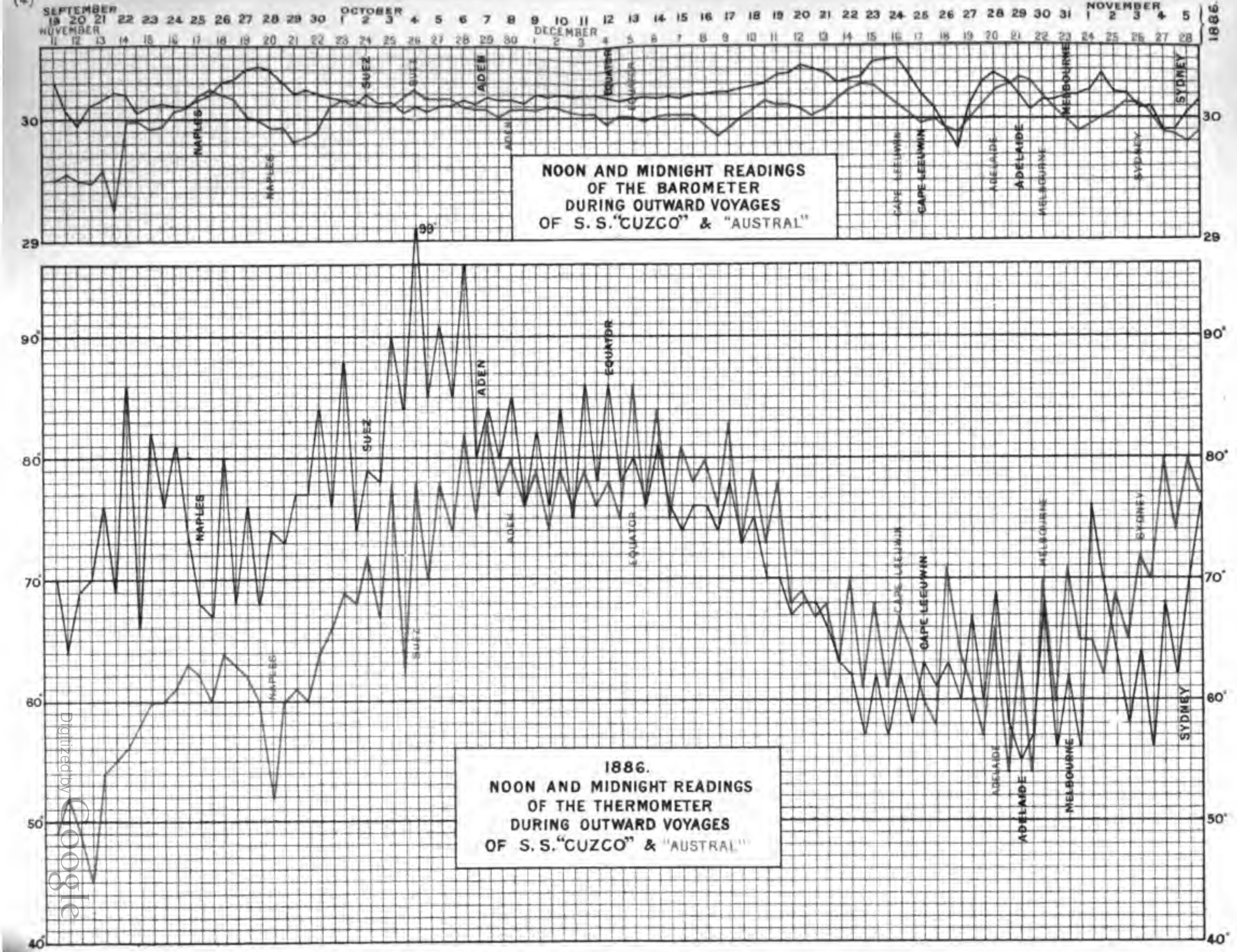


NOON AND MIDNIGHT READINGS
OF THE BAROMETER
DURING OUTWARD VOYAGES
OF S. S. "CUZCO" & "AUSTRAL"

1886.
NOON AND MIDNIGHT READINGS
OF THE THERMOMETER
DURING OUTWARD VOYAGES
OF S. S. "CUZCO" & "AUSTRAL"

eight, twelve, or more hours on deck, breathing an atmosphere not only free from all contamination, but possessing a special invigorating character, constantly bright, sunny, and in active motion. To realise the extent of this change one has to remember that an adult breathes over 1,000 times in an hour, and that, as deprivation of air for a few minutes is fatal, so its bad or good quality at each respiration is depressant or tonic. Now even the open-air of towns is charged more or less with smoke, vapours, dust, excess of carbonic acid, and emanations from animals and organic matter, all of which, and especially the last, are disadvantageous to health. On the other hand the benefit of pure country air is known to all. But the special advantage of sea-life is, not the fact that people have the finest air to breathe when they go out, but that the conditions are such as to induce them to make a practice of going into, and remaining in, that air. They breathe it many more hours than they would do even in the country, and in each of these hours inhale more than a thousand times a pure and tonic atmosphere, instead of an indoor and inferior one. At night too, the electric light, which neither uses up the oxygen required by the body, nor gives forth deleterious fumes, is now in use in all parts of the steamers of the Orient Line.

Having thus commented on the first and greatest advantage, we may consider the climatic conditions in detail. Let the reader recollect that it is now established that neither cold, heat, nor moisture, is in itself as material to well-being as the absence of sudden or great variations, and that equability of temperature is much more beneficial if equability of humidity goes with it.

The climate on the Australian Voyage is characterised by—

(1.) *Steadiness of temperature.*—The rapid passage of the vessel from England through the tropics gives rise to very erroneous notions on this point. Let us compare the extent of day and night variation—*i.e.*, the range of the thermometer between noon and midnight, with the corresponding range ashore.

The mean daily variation in London is about 11° Fahr., in Scotland about 12° Fahr. At Funchal in the Madeira Islands, described by Dr. Hermann Weber as having a climate probably more equable than that of any other health resort, the mean difference between day and night is about 9° Fahr. The Scilly Islands, which are still more remarkable in this respect, are said to have a mean daily range of only 6° Fahr. The mean range on the Australian Voyage is about 5° Fahr., as tested by examination of the temperature charts on eight outward passages all made at different seasons of the year. Appended is a table giving an analysis of these charts, which are also themselves here printed *in extenso* :—

Name of Ship.	Date of Passage.	Entire Passage Mean Daily Temp. Range.	First Week Mean Daily Temp. Range.	Second Week Mean Daily Temp. Range.	Third Week Mean Daily Temp. Range.	Fourth Week Mean Daily Temp. Range.	Fifth Week Mean Daily Temp. Range.	Sixth Week Mean Daily Temp. Range.	Seventh Week Mean Daily Temp. Range.	Maximum Range on Passage.
	1886.									
Cuzco . . .	Sept. 19—Nov. 5	6.5 F.	8.3	7.0	8.3	5.0	3.0	6.0	8.2	20 F.
Austral . .	Nov. 11—Dec. 28	5.4 F.	2.5	3.7	7.0	5.3	5.9	8.1	4.9	16 F.
	1887.									
Orient . . .	Jan. 6—Feb. 21 .	4.4 F.	4.4	6.1	5.7	3.5	4.8	2.6	3.2	13 F.
Lusitania . .	Mar. 17—May 3 .	2.6 F.	3.1	3.5	2.3	2.1	1.6	3.1	2.3	11 F.
Chimborazo .	May 12—June 28	5.5 F.	6.9	9.9	4.4	3.6	3.9	4.9	4.2	17 F. (Sz.C.)
Orient . . .	June 23—Aug. 9 .	4.6 F.	6.4	6.3	6.6	2.3	3.0	4.5	2.5	22 F. (Sz.)
Lusitania . .	Aug. 5—Sept. 21.	3.6 F.	3.4	4.4	3.9	2.1	2.3	3.5	6.0	17 F.
Garonne . .	Oct. 1—Nov. 17 .	8.03 F.	6.4	8.5	8.8	6.0	9 9	7.8	8.8	16 F.
	Average . . .	5.07 F	5.1	6.1	5.8	3.7	4.3	5.0	5.0	

Passages differ it will be seen in this respect, but on that passage in which the mean daily range was greatest (*Garonne*), it was less than the mean at Funchal, whilst the more fortunate ships enjoyed a steadiness of temperature quite extraordinary. Besides this small mean, it is to be observed that the maximum change experienced on any day of any of the passages is slight compared with the maximum changes ashore, where variations of 30°, 40°, and often many more are met with. A fluctuation of 22° was the greatest recorded, that being experienced in Egypt, where indeed the changes are generally more marked than at any other stage of the passage. On the homeward journey especially invalids should be careful as to clothing in the canal, and just after leaving Port Said.

The second and third weeks of the outward journey, it will be seen from the table, show a slight increase on the mean for the whole distance, the fourth and fifth weeks are slightly below, and the first, sixth and seventh weeks, keep close to the average.

(2.) *The Absence of Extremes.*—Enough having been said to prove the gradual nature of the changes experienced, let us look at the actual heights attained by the thermometer. It will be a sufficient surprise to those who associate the word "tropics" with a temperature of, say 95°—115° in the shade, to find how moderate are the highest temperatures experienced. The subjoined table will afford the best evidence of this, and to it we refer our readers:—

Name.	Date.	Number of days on which Temperature reached 90°.	Number of days on which Temperature reached 85°.	Maximum Temperature of Passage.
	1886.			
Cuzco	Sept. 19—Nov. 5	4	8	99°
Austral	Nov. 11—Dec. 28	0	1	86°
	1887.			
Orient	Jan. 6—Feb. 21	0	0	83°
Lusitania ..	Mar. 17—May 3	0	4	88°
Chimborazo ..	May 12—June 28	3	9	91°
Orient	June 23—Aug. 9	2	2	92°
Lusitania ..	Aug. 5—Sept. 21	2	7	94°
Garonne	Oct. 1—Nov. 17	3	13	95°

As a rule, the heat is trying only at the lower end of the Red Sea, and often, even there, no inconvenience is experienced. As will be pointed out later, the sufferings supposed inevitable in this region are nearly always avoidable by the exercise of prudence, and have of late been materially diminished by the increased speed of the steamers (which both creates more breeze and shortens the time spent in the Sea), by mechanical ventilation, and by the plentiful supply of ice which is manufactured on board every Orient Line steamer.

The traveller, generally speaking, passes from our so-called temperate regions through a delightfully steady warmth, with possibly an oppressive day or two, into the moderate or hot climate of Australia, according as he arrives in winter or in summer.

(3). *The Constant Humidity of the Atmosphere.*—This is caused by the continuous evaporation from the surface of the sea. Being much more constant in its amount than is the case on land, it affords, as will be explained later on, a valuable protection against chills.

(4). *The presence of certain constituents of special tonic value.*—The principal of these is ozone, which exists in much larger proportion than usual, and is supposed to be produced by the combination of wind, sun, and sea. It is credited with tonic and appetizing properties, and some authorities regard it as an aid to healthy sleep. The sea-air also contains traces of chloride of sodium (or common salt) and of bromine and iodine, and its electrical condition is further believed to differ from that of the shore atmosphere, while it is of course at constant high barometrical pressure. What hygienic value the latter circumstances may possess, the science of climatology does not yet definitely inform us.

(5). *The constant motion of the air.*—This has a decidedly exhilarating effect. An ordinary pleasant wind does not travel at the high speed usually attributed to it, and a breeze of 12 to 15 miles an hour is sufficient to produce agreeable stimulation. Accordingly, except in the rare event of the wind's blowing exactly in the course and at the speed of the vessel, such a breeze is always to be enjoyed on a swift steamer by those who wish it, whilst anyone who prefers a still atmosphere may find shelter somewhere on deck.

(6). *Continuous sunshine.*—The therapeutic value of sunshine and absence of depressing rainy days is known to everyone. As a rule, there are only a few hours of rainy or very dull weather throughout the voyage, and always a much smaller proportion of it than in health resorts on land.

To sum up, the oceanic climate is warm, equably humid, with the purest of all atmospheres, bright sunshine, with as much breeze as is pleasant; and it combines to a large extent an invigorating effect like the climate of a high altitude, with the soothing character of warm humid regions like Madeira.

It may be of interest to many readers to note in passing, the cause of the superior equability of temperature. In the first place, air does not itself receive and retain heat. Were moisture absent, we should be quite dependent on the sun, and on heat at second hand radiated from the earth. In perfectly dry air, the earth's borrowed heat would at night be very quickly exhausted by radiation, and this occurs to a great extent in very dry places, causing extreme variations between day and night. But fortunately, the globe is wrapt, if unevenly, with a layer of moisture "like a garment," which can retain some of the sun's direct heat, and, curiously, retain to a greater extent the heat radiated from the earth. The more moisture, the less loss by radiation into the upper strata of air during the night, and the less nightly fall of temperature. Over the ocean the moisture is constant and copious, and further, according to Tyndall, "to the rays (heat) emitted by water aqueous vapour is especially opaque." Thus, less heat is lost by radiation at night at sea than ashore. Again, the sea has a higher "specific heat" than earth, which implies that it is heated and cooled more slowly.

"Water allows the rays of the sun to pass to a greater depth than land; hence the surface does not warm so rapidly. The circumstance that the air above the surface of water contains more vapour, checks the loss of heat by radiation, and as soon as by the latter cause the upper layer of water becomes colder than the lower, the latter ascends to the surface, while the former sinks to the bottom; hence the refrigeration of the surface of a body of deep water, and of the air resting on it, is much less great than is the case with land during a clear and calm night. The surface temperature of the sea near the Scottish coast varies on the average only 0.6 Fahr. in 24 hours, while on land the average variation in Scotland is about 12°, and the maximum daily variation of the water of the sea is 5.6°, while on land it is sometimes as much as 80° and even 90°." (Herman Weber, M.D. Book of Health.)

Having considered the climate, we come to regard from a health point of view the changed habits produced by the conditions of sea-life. On the vital change we laid stress at the beginning of this article. Climate would be of little account were it not for the substitution of an out-door for an in-door life. An observer might be misled into thinking that the complete rest, the freedom from care, obligations, work and worry generally, with the entire change of scene and the influence of novel and beautiful surroundings, must be more potent for good than even the circumstance to which we have assigned the first place. But it is not only the hard-worked individual who benefits, but also those who are as free from compulsory occupation ashore as afloat, and who, having had no exertion, need no rest. The restfulness of the passage is of special benefit to the over-taxed professional or business man. He finds that beyond dressing and taking meals, he need undergo no mental nor bodily exertion whatever, and may enjoy a long rest of a fulness unattainable ashore, and enhanced by the reflection that every hour spent on deck, instead of being wasted, is increasing his bodily power and capacity for labour.

As regards the muscular system, whilst the motion of the vessel causes a continuous and generally imperceptible employment of the numerous muscles engaged in maintaining whatever posture is assumed, muscular exhaustion is always unnecessary, and the modicum of exercise required by the individual may be obtained by the methods familiar to passengers.

AILMENTS SPECIALLY INFLUENCED BY THE VOYAGE.

We next pass to consider what abnormal states are likely to be specially benefited or the reverse. With regard to the vast majority of illnesses, a medical man who considers the conditions of sea-life should be able to form his own conclusions. The time is past for sending patients away to sea with a vague hope that some mystic marine virtue may work a kind of miracle. If the disease is such that it is the primary object of the physician to improve sanguification and nutrition, and if there is sufficient nervous energy left in the patient to respond to the stimulus of the nearest approach to a completely open-air life free from much of the usual risk of chill, with good food, rest, sunshine, breeze and change of scene, then the ocean trip will produce highly satisfactory results. But diseases into the treatment of which these considerations cannot enter will gain no magical or mysterious benefit from the sea. To send away people in the worst stage of consumption, or with uncompensated valvular disease, or suffering from insanity, is nothing less than reckless folly.

Consumption.—We cannot here enter into the relative merits of the high altitude, the desert, or the oceanic climate in the treatment of different varieties of this disease. There are many special and excellent books on the subject, but some salient facts may be mentioned here. The Registrar General's statistics show how rare, comparatively speaking, consumption is amongst sailors. And it is now held that no treatment is of more value in the early stages of consumption than removal from a deleterious occupation and atmosphere, and improvement of nutrition. Again the idea that consumptives are specially liable to lung-hæmorrhages at sea is now held to be baseless. But patients, as a rule, will not yield to medical advice early enough, objecting to a voyage until the severity of their illness is obvious to themselves, by which time it is often useless. An early sea voyage is often of incalculable benefit, and especially to those young persons who, having a strong hereditary taint, are in danger of being attacked by the disease in early adult life.

It is difficult to lay down an absolute rule for judging when a patient's illness is too far advanced for him to benefit by a voyage. But it may be said that if he can take with him nurse, relatives, and his invalid appliances, he may go at a later stage than is otherwise right.

If he is not able to manage for himself, to dress, attend meals, and get about unaided, he ought either to be prepared to take an entire state-room and special attendant, or to seek climatic treatment elsewhere than at sea.

Tubercular disease generally is eminently suited for this kind of treatment, always subject to the condition just laid down. Delicate children often lose much of the characteristic appearances during a single passage.

Chronic Dysentery.—In many cases a voyage cures this complaint. Remarkable experiences in this respect have been had by naval and transport surgeons bringing home troops from India. Cases that have endured many months despite treatment have recovered during the run from Bombay to Aden.

Heart Disease.—Patients with advanced cardiac and specially aortic disease, or hardened arteries, should avoid going to sea. A little reflection will show that a sudden exertion cannot be guarded against so completely as on shore. The only sufferer from marked aortic disease the writer has had under treatment at sea ruptured the valves while on a wet deck when the ship was rolling.

Overwork—Insanity.—Few can benefit more than the really over-taxed and and over-worried brain-worker. His insomnia frequently yields, and in any case is less hurtful. He whose cerebral irritability has foiled his best efforts to obey his physician's order to "rest his mind," is speedily taught how to do so most effectually on shipboard. But when the disorder crosses, or is likely to cross, the borderland between sanity and insanity, nothing can be more criminal than to confine the patient to a place where, if becoming melancholic, he can give himself wholly up to brooding on his griefs; if meditating suicide, he is reminded at every hour of the day and night how easily he can throw himself into the sea; if tending to be violent, he endangers the peace and safety of all on board the vessel.

Kidney Disease.—The great activity of the skin in the tropics and corresponding diminution of renal excretion is of marked value in certain disorders of the kidney.

Asthma and Eczema.—These disorders are variously influenced, sometimes for the worse.

Wounds that have been long troublesome sometimes heal very quickly at sea.

HOW BEST TO OBTAIN THE FULL BENEFIT OF A VOYAGE.

Under this heading it is not intended to go into the details of ship life, but to lay emphasis on certain errors usually made by passengers which detract from their comfort and health. The first and greatest by far, is the consumption of almost the same amount of food in the hot as in the cool parts of the voyage. This is the main reason why, although no really high degrees of temperature are passed through, yet much discomfort, languor, and even sometimes heatstroke occur. The following facts will show the vital importance of regulating the diet. The human body has to maintain itself at a uniform temperature (98°—99° Fahr.) no matter if it be in cold or in heat. So soon as, in a cold climate, the surface loss renders the internal production of heat unequal to keeping the body at that temperature, death takes place. And so soon as, in a hot moist climate, where surface-cooling is reduced, the internal heat-production is not sufficiently controlled to prevent its raising the body temperature above that degree, there occurs the often fatal increase called "heatstroke," which may be as mortal as direct sunstroke.

In a medium climate and with ordinary diet an adult produces heat enough to raise the body in half-an-hour nearly two degrees Fahr. "If no heat was given off the body would become very hot in a short time; it would reach the boiling point in thirty-six hours supposing the production of heat continued uninterruptedly" (Landois's *Physiology*—Stirling). It is clear then that it is as necessary to reduce internal heat-production in a hot climate, as it is to increase it in a cold one. But internal heat-production depends on amount and quality of food, which is burned up as fuel for the body. Therefore, amount and quality of food must vary according to climate. Hence the Esquimaux consumes pounds of blubber, the Indian a modicum of rice and fruit.

Although habit counts for much, and the European cannot profitably copy exactly the diet of the natives of the tropics, it is the grossest error for him to neglect the precautions emphatically dictated by science, and proved by experience.

Yet again and again in the Red Sea, where loss of heat by radiation, by conduction, and by evaporation, are all much limited by moist warmth, one may see gentlemen and even ladies taxing the resources of an elaborate table three times a day, and consuming rich animal and other heat-producing foods in sufficient quantity to keep their temperature at 98° in an English winter, and to destroy their comfort, and even endanger their safety in a moderate tropical heat. Any passenger who diets himself sparely just before and during the part of the voyage where moist heat is experienced, will be promptly and fully rewarded for his self-denial. With regard also to alcohol, it is advisable to avoid the heavier and stronger forms, but the strictest teetotalism with excessive eating will not avail to give the vigour, comfort and safety, which a really light dietary will ensure.

The second error is made in the matter of clothing. Recent investigation confirms all experience in giving woollen fabrics the first place as regards health. Flannels and other forms of woollen clothing are now made sufficiently fine and smooth to avoid the former objections to their use as night dresses, underclothing, &c. The ultra-sensitive may use silk, which occupies the middle position. Cotton and linen are the worst.

Wool absorbs more moisture in proportion to its weight, and is, therefore, less easily saturated. It also conducts heat less, and thus exposes the wearer to fewer and more gradual changes of temperature. The danger from chill by evaporation on exposure to draughts is thus materially lessened.

In the tropics, nothing but flannel or other woollen fabric should be worn next the skin, and during the heat the less clothing the better.

It is essential that invalids should give up their British belief that they need many extra layers of clothing on account of their weakness. Over-heating the body taxes the strength instead of keeping it up, as has been shown in the case of diet. The only two serious cases of heatstroke seen at sea by the writer were in invalids who were found to be wearing an extraordinary amount of thick underclothing in the tropics, and actually kept below to avoid draughts and chill. Again infants and delicate children are often rendered feverish and miserable by being clothed as if exposed to the British climate. It must be clearly realised that draughts, damp air and wettings, mean little unless the draughts are cold, and the dampness variable. Draughts to produce chills must either be themselves cold, or give rise to rapid evaporation. But on the Australian Voyage they are too warm to hurt, and not dry enough to cause the chill of rapid evaporation. A damp deck is thus very different from a damp floor or wall, or one would have a different account to give of the freedom from chills at sea. Sudden evaporation cannot take place in a humid atmosphere.

It is to be remembered, however, that although chronic precautions suitable in Britain are absurd at sea, when a variation of temperature does occur it should be counteracted as carefully as anywhere else. Particularly when nearing port, and in the Canal (specially on the homeward passage), extra clothing should be kept at hand.

White is the best colour for clothes, black the worst. Sun helmets and light shoes with rubber soles for the deck should be provided for enjoyment's sake. Finally let the invalid vary his clothing carefully according to the temperature. Let him be well provided with warm garments for the ends and with light costumes for the middle of the voyage, and let him substitute common sense and white flannels for fashion and white ducks.

Sleeping on deck is advisable for the healthy during the few days at certain seasons when the temperature below is not easily borne. Flannels must be worn, and a resting-place under cover selected. As a constant practice it is, of course, not to be recommended.

For the delicate, the practice of taking a daily sea-water bath is often too exhausting. Three or four a week suffice for persons deficient in vigour, and even the moderately strong will find the benefit of an occasional intermission.

Prickly heat *(Lichen Tropicus)* is to be expected, especially in children, and, even when very copious, need excite no alarm. The itching, if severe, may sometimes be allayed by a weak solution of carbolic acid in water, applied with a brush to the part. Temporary starvation will materially lessen the trouble. Occasionally, and especially on the face, a few of the spots grow into vesicles remarkably like those of chicken-pox, and experienced matrons should endeavour to restrain a consequent instinctive diagnosis and expression of opinion which spreads baseless anxiety amongst the parents on board.

Little importance is to be attached to an œdema of the ankles which is extremely common about the time of entering the warmer latitudes, and is probably caused by relaxation of the vascular walls. It is remarked sometimes even in very healthy people. It is common among females. It generally passes away in a few days, after giving rise to a scare of "dropsy."

Indigestion is common after a time. Appetite is abnormally stimulated by the open air life, leisure and a varied bill of fare. The surgeon's difficulty is to persuade his patients to eat enough the first day or two when they are sea-sick, and later on to give up eating too much. Simple reduction in the quantity consumed at each meal is, in most cases, all that is needed. The practice of counteracting the natural and proper diminution of appetite in hot weather by "cocktails," &c., is especially dangerous if it leads to heavy eating.

We shall now conclude with some observations on sea-sickness, generally a subject of much interest to those who experience it.

Sea-sickness is a disorder occurring during the inability of the parts of the body to perform their function as usual when subjected to the motion of a vessel. It subsides so soon as the organs can work under the new conditions, which generally occurs in from one to three days. Those who look to drugs for a cure of sea-sickness must find one that can teach the various parts of the system how at once to act as usual, whilst being irregularly rolled, pitched, twisted, or all three. Within the last year sea-sickness has received much attention from medical men. The Société de Biologie of Paris devoted two whole days to hearing and discussing the results of investigations on it, and in England many authors have recently published their views, which have been discussed in the medical journals. Here is a list of the more prominent drugs which have, singly or combined, given by the mouth or hypodermically recently been vaunted as specifics:—Antipyrin, Cocaine, Morphia, Nitrite of Amyl, Ingluvin, Pilocarpine, Strychnine, Atropine, Caffein, Capsicum, Bismuth, Chloroform, Chloral, and the Bromides of Sodium, Potassium, and Ammonium.

Medicines may be required in exceptionally severe cases, and with these it is not our province to deal, but everyone should learn to take a common sense view of the matter, and neither unnecessarily summon professional aid, nor think themselves about to succumb because they feel very ill.

After looking at the theory of causation we shall give the more important, if disappointing, directions for treatment.

Various movements cause sickness and vertigo, such as swinging or turning round and round. Some individuals are more easily made ill, and the same person is more susceptible if out of sorts than he is in health. The central nervous system (brain and spinal cord) is regarded as probably mainly affected by the movements. Twisting the head alone whilst keeping the body still, produces much of the uneasiness. And the advocates of the theory that lays stress on the shaking of the abdominal contents, &c., do not satisfactorily explain why hopping and riding fail to produce the symptoms. Doubtless the close connection between brain and stomach renders the latter organ able to materially influence the health, and, therefore, susceptibility of the former. Hence one who is generally a good sailor is sea-sick when dyspeptic. And while it may seem ridiculous to anyone who remembers his recent sensations, to lay the blame on an organ so remote as the brain, but a slight physiological knowledge explains the apparent contradiction. Therefore, whilst not professing to decide whether the brain is affected directly, or through the shaking of fluid in the internal ear, or through the interference with the even and regular distribution of the blood, there is little doubt of the cerebro-spinal origin of sea-sickness.

The chief cause of delayed recovery is deficiency of air and food. To speak popularly, after the first day of extreme revolt the organs try hard to work together again, but are nourished so badly, on account of the continued presence of nausea, that they lack strength to do so. It is an interesting fact, that female emigrants who have to go on deck by a certain hour, recover much sooner than passengers who can remain in their cabins.

There is less sea-sickness for a given sea in a large vessel than in a small. Anyone who doubts this should compare the comfort on the large steamer with that on the little tender during a breeze, say at Port Adelaide.

By the end of a voyage the trouble is almost forgotten, and long before that an occasional roll has lost its terrors for the great majority.

People who suffer much should make the passage during the period October to March, when the monsoon is not blowing.

Treatment.—Cases of extreme severity and length must, of course, be placed under the care of the Surgeon, but persons of common resolution rarely need professional advice for a trouble so trifling in danger, however trying to endure.

As the digestion influences the attack, it should be cared for before the start, and specially constipation avoided. More important it is to quell the silly nervous apprehensions that predispose to the attack, reflecting that the disorder is largely controllable by will, and that after a short period of extreme discomfort one will quickly and surely get well. Everyone should resolve most firmly that so soon as the first violence of sea-sickness is past, they will compel themselves to swallow something, and allow stewards or stewardesses to convoy them to the deck. Food is usually repugnant, and people believe a mouthful will make them sick, consequently refusing to take it. But such feelings are to be got over, and he who, however hopelessly, forces a little nourishment down his throat will soon recover. Frequently if the first mouthfuls are rejected an interval of diminished nausea occurs, which should at once be taken advantage of.

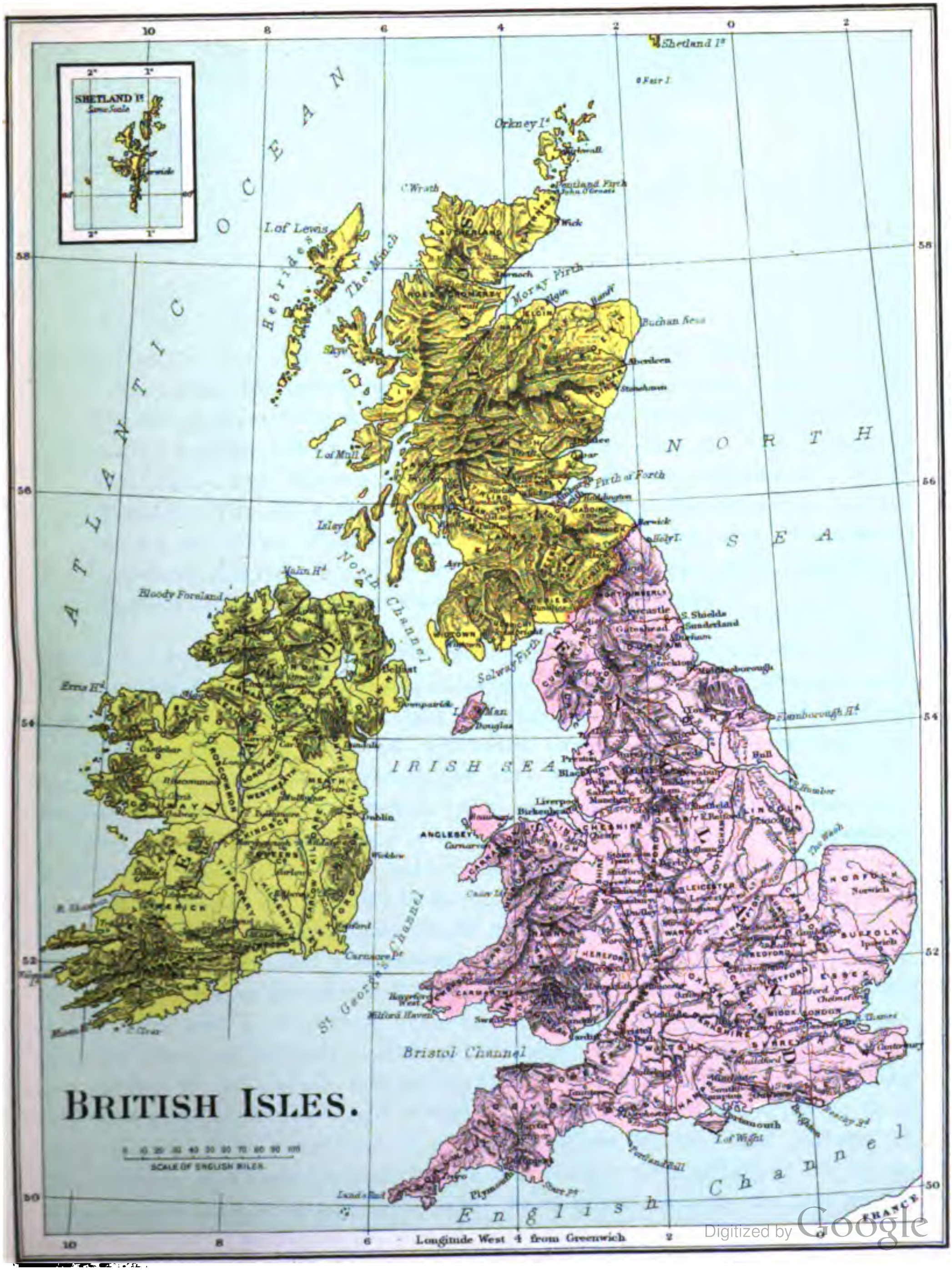
Brandy, biscuits and water arrowroot are three of the main props at this period. Anything fancied, however, may be freely tried.

If at all possible the sufferer should lie on deck. Flat on the back with the head low (and with an abdominal pad) is the best position.

No one should be left more than the first day without being made to take air and food. These observations apply to cases of a certain severity. Many persons feel but transient nausea, at once removed, strange as it may appear, by a meal. To yield to a slight feeling of this kind, and go below to a comparatively close cabin for fear of being seen ill, is an error particularly common.

First a little time and rest, then forced feeding and fresh air, are the cures for sea-sickness.

In conclusion we would impress on all invalids and others, that whilst those who make an Australian Voyage without a little thought and some attention to obvious precautions, may benefit but little, the prudent may confidently expect a remarkable improvement in health and strength.



BRITISH ISLES.

CHAPTER III.

THE MOTHER COUNTRY.

AUSTRALIANS IN ENGLAND.—TOPOGRAPHY.—LONDON BY THE THAMES.—GREENWICH.—THE DOCKS.—DEPTFORD.—THAMES TUNNEL.—THE TOWER.—THE CROWN JEWELS.—THE ARMOUR.—ST. PAUL'S.—LONDON AND THE SUBURBS.—OLD LONDON.—WESTMINSTER ABBEY.—LONDON SIGHTS.—THE NATIONAL GALLERY.—THE BLENHEIM RAPHAEL.—THE SUFFOLK LEONARDO.—THE TITIANS.—THE WATERLOO VAN EYCK.—TURNER.—GAINSBOROUGH.—THE STORY OF "THE PARISH CLERK."—HAMPTON COURT.—ITS HISTORY.—WINDSOR CASTLE.—SUMMARY OF ITS HISTORY.—PLACES NEAR LONDON.—ELTHAM.—EDGWARE.—THE CHARM OF ENGLISH SCENERY.

WE may begin our account of the principal places visited by the ships of the Orient Line with a few words about our mother country. If this book was intended only for Australians, it might be necessary to point out the advantages of a visit to England; but even Australians hardly require to be reminded of them. So far, it has been acknowledged very widely. "Rich Australians" are becoming known in Europe as well as "rich Americans." The effect of travel on the mind as well as on the body is recognized as wholesome. True, sometimes what is wholesome is not very pleasant; and an Australian does not always like to be told, as he sails into the Bay of Naples, for example, that the city before him is larger and more populous than all the capital cities of Australia put together. If however he is determined to persevere in what, with reference to such a country as Australia, it seems absurd to call "insular" pride, he may well reply in no town of his native land is the annual death-rate so high, or the poverty of the people so great. So too as he nears the end of his voyage, and is taunted with the verdure and fertility of the English soil, he may well reply that millions of Australian cattle and sheep are annually sent to feed the people of this fertile country. It is better to avoid these comparisons in our conversations, however, and, perhaps, let the Australian who visits England for the first time awake gradually to the knowledge of what may be disagreeable, while he is impressed from the first by the hearty welcome he receives in the land of his forefathers.

In this chapter, and those which immediately follow it, an attempt is made to interest the reader in what, for want of a better word, is called among us "topography." Where a country is newly settled, and has, so far, figured but little in history, topography includes geography, geology, and zoology, but little more. In Europe, on the other hand, it comprises all these sciences, and many besides. We want to see lands where great events have taken place, plains where fierce battles have been fought, cities that have sustained long sieges, houses where mighty men were born, and to visit the famous galleries and museums and libraries, where works of art, and relics and records, older by thousands of years than the civilization of a new country, are to be seen. Such sights open the mind. The intelligent traveller who has used his eyes abroad, goes home wiser and better. He has seen much that he could admire—much too, it is to be feared, that must serve to warn him; but a day in one of the capital cities of Europe has taught him more, not only in art, history, and politics, but in social science, than he could learn in years of reading at home. Mere geographical facts put into words will give him but little idea what the cradle of his race is like. When he has seen it, he goes back impressed with the knowledge of what that race has done, and can do, and with the greater determination to uphold in another hemisphere the credit it has won. There is no need to dwell any further on the advantages of a visit to the mother country. Her history is cherished by every Australian colonist as his own, and her islands are loved by many who never saw them. London, her capital, is the capital of the world.

The Australian who would receive the fairest impression of London cannot do better than sail up the Thames, say by one of the regular Gravesend steamers. A more complete idea of the magnitude of the great City and its Trade is thus afforded than any other method of approach can give.

On leaving Gravesend there is little of immediate interest along the distant banks until Greenhithe and Erith are passed on the left, and Purfleet, with its peculiar chalk cliffs and great powder magazine, is passed on the right hand. After this, however, manufactories and works of one kind and another become more frequent, and to the left stretch away the flat Plumstead Marshes, chiefly known as the locality for every kind of gunnery experiment. On the same side of the river Woolwich is seen with its great arsenal. The dockyard, with its building-sheds, is now practically deserted. Immediately after passing Woolwich, away inland on the right, is seen the beginning of a forest of masts which mark the presence of the vast docks and shipping of the Port of London. These docks, on both sides of the Thames, occupy an area which can only be measured in miles. On the right

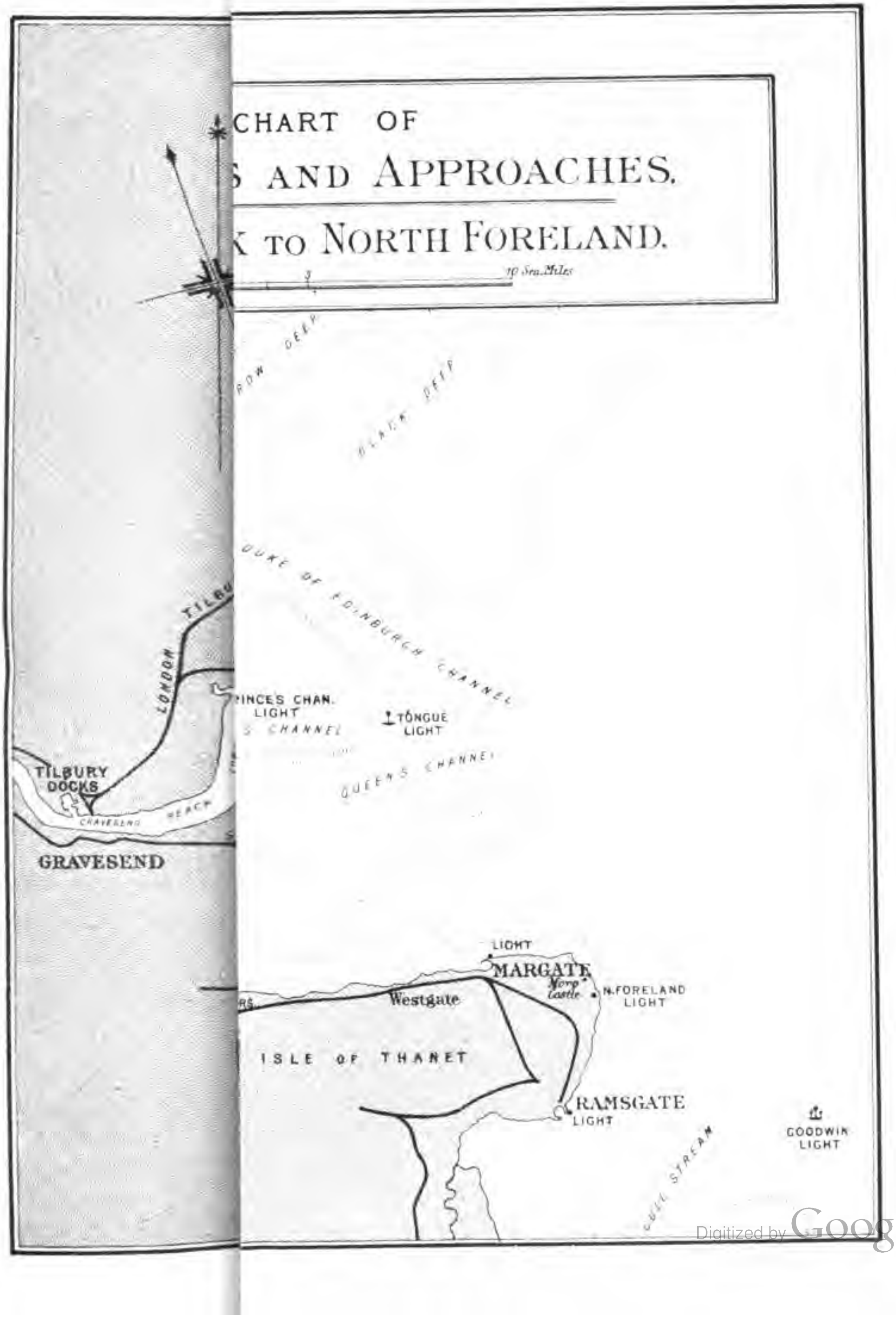


CHART OF

S AND APPROACHES.

K TO NORTH FORELAND.

hand is presently passed the historic Blackwall, where, in the old sailing-ship days, so many a parting and arrival has taken place. Here is the entrance to the East India Docks. A sharp bend to the south carries us up Blackwall Reach to Greenwich, and when Greenwich appears on the left we may be said to be in London, for Greenwich, although five miles from Charing Cross, is now joined to it by a continuous street. The first important public building that meets our eyes is Greenwich Hospital, once a royal palace, now the Royal Naval College. It is a larger building than any palace in England except Windsor Castle, the front towards the river being 290 yards long, and the square in the centre, of which we get a passing sight through a vista of coupled pillars, 190 yards wide. The Hospital, a monument to the virtues of Mary II., was established by her husband, William III., and on the forfeiture of the adherents of the Old Pretender, the estates of the Earl of Derwentwater were assigned for its maintenance. It was opened in 1705 to admit 100 seamen. During Nelson's victories, as many as 2,700 seamen, many of them maimed, were supported here. In 1869 the Hospital was abolished, pensions being preferred by most sailors. The buildings bear the mark of many minds and many hands, but the whole design, one of the most successful for picturesqueness and stateliness combined, is to be attributed to the genius of Sir Christopher Wren.

Before Greenwich is out of sight, it may be worth while to recall the fact that Henry VIII., Queen Mary, and Queen Elizabeth were born, and Edward VI. died, in the old palace here; and to look up, through the park, to the famous Observatory from which longitude is reckoned as east and west of Greenwich.

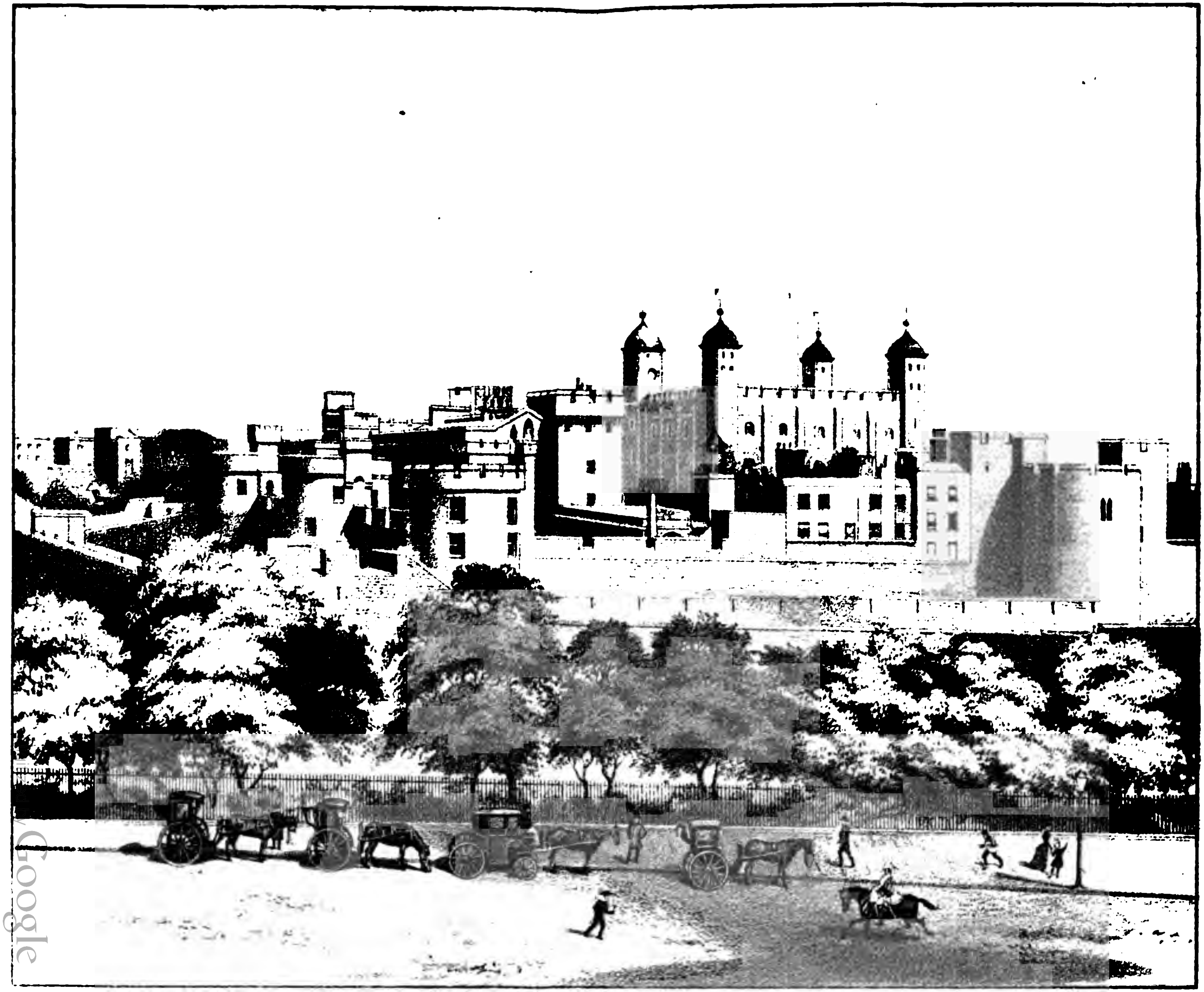
On the opposite shore is the Isle of Dogs, once a kind of delta, formed by the Essex river Lea, which here fell into the Thames. It is now a network of docks. These form the Port of London, though not a single dock is in the City itself, the nearest being St. Katharine's, made in 1828, with the moderate size of 24 acres, which at that time was thought enormous. It is now completely surpassed by many others, and especially by the new Tilbury Deep Water Docks which have recently been completed, and are described more fully in the next chapter. St. Katharine's is on the site of an ancient hospital of that name which was removed to Regent's Park, when the ground on which it stood was dug out and carried to Pimlico, some miles higher up the river, where it was employed to fill up and raise a marsh, on which streets and squares, some of them now most fashionable, were built.

There are few of us who have not read with interest the memoirs written in his diary by John Evelyn in the reign of Charles II. As, about one mile from Greenwich, we pass Deptford we are reminded of him, for he lived at Sayes Court, where we still see, among masts and chimneys, a few green trees. They mark the site of a public garden and museum given to the place by the present representative of the Evelyn family. It was here that Peter the Great lived for three months when he was studying shipbuilding in the adjoining dockyard. Many are the complaints made by Evelyn at the illtreatment his gardens received from the Czar and his half-civilised servants. Among the Treasury Minutes there is one recording the payment to him of £162 7s., in recompense for the damage done to his house, goods, and gardens at Deptford "by the Csarizes Majestie and his retinue."

A little beyond Deptford we pass Millwall with its docks on the right, and the western entrances to the enormous West India Docks, which cover 295 acres. From the time we passed the Albert Docks, we have in fact, being moving along parallel with an almost continuous line of dock walls. At Shadwell we come to the London Docks, of about 120 acres. Immediately opposite is Rotherhithe, or as it is often pronounced Redriff, a place which looks unsavoury enough now, but which was a fashionable watering place in the reign of Henry IV., who lived here for four months in 1412, for the sake of the fine air. Here are now the Commercial and Surrey Docks, covering together about 350 acres.

We are now over the Thames Tunnel, an undertaking which forty years ago was looked upon as one of the wonders of the world. It cost half a million sterling, and was eighteen years in course of construction owing to the difficulties encountered by the engineer, Brunel. At one time the works were abandoned, but eventually the tunnel was completed, and long struggled on under a load of debt. A bazaar was held in it at first—a railway runs through it now. Its place, for foot passengers, has been supplied by what is called the Tower Subway, which was constructed by Mr. Barlow in less than a year for about £16,000. The tunnel connects Wapping with Rotherhithe, though Wapping has changed its name, and is now generally called St. George's-in-the-East. But Englishmen will never forget the song of "Wapping Old Stairs."

From this point we have one of the most interesting views in England, or perhaps, to an Englishman, in Europe. The group of buildings to the right looks familiar, though we may never have seen it before. For a moment we do not realise that these turrets and vanes, that large staring white house with small windows, the long and embattled wall and terrace by the riverside with the quaint arched gateways, are the Tower of London. It is, after Tilbury Fort, the first piece of historical antiquity which the Australian sees if he approaches London by the Thames, the Tower Bridge framing it, as it were, into a picture. The following brief account is summarised from the *Authorised Guide* to the Tower, to the larger edition of which the reader must be referred for further information.



THE TOWER OF LONDON.

Google

The ground on which this ancient fortress stands marks the extremity to the south east of the old Roman Wall. There are Roman bricks in the foundation of the White Tower, the "keep" of the castle. But the two bastions of the old wall were entirely covered or removed, and the oldest buildings are the keep mentioned above and the Wakefield Tower near the entrance, in which the Crown Jewels are now kept. These were begun about the year 1078 or twelve years after Hastings. The grim walls, ancient as they look, have been refaced and "restored" over and over again. Nearly all the windows have been altered, and of the little that was left in 1709, nearly all was destroyed about twenty years ago. Nevertheless, there is enough in the Tower of London to make a visit extremely interesting. It is, or has been, a fortress, a palace, and a prison. Now, it is a museum, and something more, for it is a museum with historical associations about it, a sight to see both for what it is and for what it contains.

The Crown Jewels are in the custody of an officer who lives in the adjoining tower but even he may not open the case in which they are preserved, except in the presence of the Lord Chamberlain. They consist of a large number of articles, nearly all of which date from the restoration of Charles II., but an anointing spoon seems to be a relic of the old regalia. The Queen's crown forms the summit of the whole collection of gold and precious stones, and, though the most modern of the objects shown, will be regarded by the visitor with the greatest interest. It contains no fewer than 2,783 diamonds, 277 pearls, 17 sapphires, 11 emeralds, and 5 rubies, including one which belonged to the Black Prince and was in the helmet of Henry V. at Agincourt.

The collection of armour is chiefly in the upper chambers of the White Tower, where it is well arranged and well lighted. The Beauchamp Tower, with the prisoners' inscriptions, must not be passed by; and the enterprising sight-seer will make an endeavour to get into the little church of St. Peter ad Vincula, where so many illustrious personages lie buried.

When we have passed the Tower, and even sooner, we see rising more than four hundred feet from the river's level, the vast dome of St. Paul's, one of the most perfect monuments of architecture in the world. If it has a fault it is its uniform character: it has no incongruities, and may be thought in that particular to be somewhat wanting in picturesqueness. But when the visitor sees it, not straight in front, but at some corner, or when at his first walk through the City, he pauses at Peel's statue, at the western end of Cheapside, and looks towards the vast and well-proportioned dome rising above the bright green foliage which now adorns the churchyard, he will be forced to allow that the view is, to say the least, extremely pleasing. To the architectural student St. Paul's is a building of unrivalled interest. It is the only cathedral on a large scale—and in this respect it ranks second only to St. Peter's at Rome—of which it can be said that it was designed by one architect, Sir Christopher Wren, built under the superintendence of one clerk of the works, Edward Strong, and during the lifetime of one bishop, Henry Compton. No wonder Sir Christopher's son put on his father's tombstone in the crypt the words "*Si Monumentum Requiris, Circumspice*:" if you seek his monument, look around you. Here Nelson and Wellington and many other great soldiers and sailors sleep in peace, and the memorials of many who perished in foreign lands are here to be seen: no architect of equal fame lies besides Wren, but the greatest English landscape painter, Turner, and Landseer, the animal painter, so well-known throughout the world, are both buried near him.

We are now in London, the greatest city in the world, indeed, so far as correct statistics can teach us, the greatest city that has ever existed, for the populations assigned to ancient Babylon and ancient Rome are mere guess-work. London, like Melbourne, consists of a central city and of a ring of suburbs. It is usual to speak of it as the Metropolis, or the Metropolitan Area, but, except that it may now be said to have been authorised by frequent use in Acts of Parliament, this is an ecclesiastical term, and properly belongs, not to London, but to Canterbury. So, too, it is common, in enumerating the English counties, to say that London is in Middlesex. This again is an error. London is not and never was in Middlesex. London was where it is, a Roman city, before Middlesex existed. A great part of the widely-spreading suburbs are in the county of Middlesex, but not the City of London, which has never been included in any county, although for a time it belonged to Essex, one of the kingdoms of the so-called Heptarchy.

The eastern boundary between Middlesex and London passes through the point we have just reached; the outer gate of the Tower is in the City, but the White Tower, and all east of it, are in the county. The City is surrounded by other cities or boroughs. To the east are the "Tower Hamlets," comprising the ancient parish of Stepney. To the west is the city of Westminster, which is five times larger and more populous than the city of London. To the north are Finsbury and Hackney; to the northwest is St. Marylebone; to the southwest Chelsea, Fulham, and Kensington.

The population is so scattered at the edges of the great area that it is not possible to define exactly what we are to call London and what not, but we may safely assert that fully four millions of people live within twelve miles of London Bridge. Of this enormous number about 50,000 only inhabit the City, and about five times that number are occupied in it daily with business. There are 25,000 houses in the City, and the rateable value is three millions and a half sterling. Over London

Bridge alone not fewer than 150,000 persons pass every day, and 20,000 vehicles of all kinds. Of the ring of suburbs enumerated above, Finsbury is the most populous, as it contains more than half-a-million of inhabitants, and even Greenwich has more than two hundred thousand. In addition to the eleven ancient boroughs, more than sixty district villages have bee nabsorbed by London, and its suburbs, and the streets, if laid end to end, would reach from London to Naples and back again.

London, to judge by its name, which is a relic of the language of the ancient Britons, and means "the fort of the waters," was in existence when the Romans came. They built a bridge over the Thames, and made a strong castle at either end of it. A vast ring of suburbs grew up about these forts, and after they had been repeatedly plundered and burnt in various rebellions and wars, Constantine, or one of his immediate successors, built a wall round them. The old "pretorium" had stood close to where Cannon Street Terminus stands now: and we must suppose that it continued to be the head quarters of the Roman soldiers. But when they were withdrawn, the Britons could not defend London, and it is believed that for a long time the city lay empty and desolate. King Alfred saw its value as a defence against the Danes, rebuilt the broken wall, and may well be styled the founder of modern London. William the Conqueror burnt Southwark, but approached London cautiously. He was at Berkhampstead, a few miles to the northward, when a deputation of the citizens came out and offered him the crown. William in return gave them a charter confirming to them the old English liberties, of which so little remained to the conquered Saxons in other parts of England. Under his successors London flourished. The trade with the King's foreign possessions was immense: and the government of the city, which under Richard I. was intrusted to a mayor, was carried on in such a way as to foster commerce, secure liberty, and maintain order. By the time of King John, London was so powerful that she obtained a special clause in Magna Charta, and her liberties were the model on which the new constitution of England was moulded. The city was much oppressed by Henry III. In the reign of Edward I., the office of alderman became elective, and the still subsisting division into wards was made. A little later the old semi-religious trade guilds were superseded by companies which still exist, every freeman of the city being enrolled in their ranks. At first they regulated trade, each in its own department; and the Fishmongers, Goldsmiths and some other companies still discharge functions of the kind. The majority, however, are only engaged in the distribution of charitable and other funds, and in supporting schools. In the Wars of the Roses, the city took the Yorkist side, and contributed largely to the ultimate success of Edward IV.

Henry VII. was unpopular with the citizens, from whom on various pretexts he obtained vast sums of money. Henry VIII. was always liked in London, and his suppression of the religious houses was highly approved of by the people who, especially within the walls, had many causes of complaint against the monks and friars. The persecution of the reformers under Queen Mary was particularly ruthless in London, and the fires of Smithfield turned the people more and more against the old religion, so that under Elizabeth, who was always very popular in the city, they went into an opposite extreme, and by the end of the reign of James I., the majority were puritans. After the execution of Charles I., whose fall is in great part attributable to his illegal oppression of the citizens, a reaction set in, and the interference of Cromwell and the Long Parliament in city affairs was so much resented that, at the restoration of Charles II. London was completely loyal. Charles and his successor James II. found their tyrannical schemes much impeded by the civic privileges, and London was for a time deprived of its charter. The advent of William III. was therefore joyfully hailed, and in his reign, and that of Anne, the wealth of the merchants increased rapidly, the foundation of the Bank of England in 1694 being one of the greatest commercial events in London History.

The City from the time of the Great Fire in 1666 diminished in population, though it increased in wealth; and in the reign of George II., even the old walls and gates disappeared. The suburbs had spread in all directions, and had become greater by far than the City itself. As far back as the reign of Henry I., the citizens obtained the royal rights in the county of Middlesex from the crown; and very soon houses and monasteries began to spring up outside the walls. In the reign of Henry III. the Strand formed a continuous street towards Westminster, where the abbey was rebuilt by the King with great magnificence. Henry endeavoured to curtail the privileges of the citizens in Middlesex in favour of the abbot, but only alienated their affections, and they soon succeeded in obtaining from him an acknowledgment of their ancient rights. Holborn on the west, and Stepney on the east became thickly inhabited by the end of the reign of Edward III., and Westminster was rapidly increasing, especially when the law courts were permanently fixed in the King's palace. Richard II. built Westminster Hall, one of the first great events in which was the King's formal deposition and the accession of Henry IV. At the dissolution Westminster Abbey became a deanery, and the dean still occupies the abbot's place. Meanwhile, the suburbs have spread in all directions, and the City of London itself has become a mere place of business, with but few inhabitants, the houses consisting for the most part of magnificent offices, often situated in narrow lanes and courts, which still bear witness to the crowded state of old London.

The Great Fire which consumed the city in the reign of Charles II. had a remarkable effect on its healthiness. The plague, which had been almost constantly raging in some form or other, and was especially severe the year before the fire, now ceased wholly. We still see the effects of the fire in the almost complete absence of the old-fashioned Gothic churches, which are so common in other parts of England. But London justly prides herself on the churches built by Sir Christopher Wren, whose towers and spires form such beautiful features when seen from the river, the magnificent dome of St. Paul's standing out among them as the central and principal object of the view.

Among the public buildings of the city, the Guildhall, in which the citizens have assembled for more than six centuries; the Royal Exchange, where the business of half the world is transacted; the Bank of England, the Mansion House, the General Post Office, and, not far from it, the old prison of Newgate, should be seen by the visitor; who will also be interested by St. Giles' Church, Cripplegate, where John Milton is buried, and where a bastion of the ancient wall is still standing; by Crosby Hall in Bishopsgate Street, where Richard III. resided for a time, and which Shakespeare mentions in several places; but above all, by the Tower of London, of which we have spoken already.

Beyond the city limits the visitor will find even more that is interesting. Westminster Abbey will delay him longest, and cannot be exhausted in a day, or in many days. In the royal chapel of Edward the Confessor, where so many Kings are buried in the little mound of holy earth which Henry III. imported from Palestine; in Henry the Seventh's Chapel, with its wonderfully carved roof, and the tombs of the founder and of his three famous grand daughters, all queens, Mary, Elizabeth, and the ill-fated Mary, queen of Scots; in the Statesmen's Transept and the Poets' Corner; by the graves of Newton and Livingstone, of Dickens and Lytton, of "rare Ben Jonson," and Geoffrey Chaucer, Clerk of the Works to the abbey, and father of English poetry, he will find it impossible to hasten his steps, even though he is not arrested at every turn by the beauty and solemnity of "the long drawn aisle and fretted vault," and the beautiful vistas of column and arch and portal. Nor must he neglect the cloister with its green garth, where the old monks were buried, nor the library with its ancient bindings, nor the chapter room, where for centuries the English Commons were wont to assembly. But it is worth making the voyage to England to see Westminster Abbey alone for those who love ancient architecture and historical associations. For those whose interest lies more in what is modern, there is at Westminster another building to which in their minds even the abbey will yield. The old palace is gone, but already enough of association has gathered about the Houses of Parliament to render them well worth a visit even to those who do not care for splendid architecture, gorgeous decorations, fresco paintings by great artists, mosaics and stained glass. The ancient hall, with its fine oak roof, forms an appropriate vestibule to the parliamentary precincts, and now that the shabby buildings in which for many years the chief courts of law were seated have been pulled away, we are able to see the western side with its long roof and its buttresses.

The new Courts of Justice are situated at Temple Bar, and stand partly within the old city boundary. The visitor whose time is limited will perhaps be contented with a view of the exterior, and will hasten on to the National Gallery, a mean-looking building on a fine site, or to the British Museum, where ancient books, Greek sculpture, Egyptian and Assyrian monuments, majolica, ivories, and many other objects of curiosity or beauty will contend to detain him; or to the South Kensington Museum, where only art and not mere curiosity is admitted, and where the principal institution is flanked by the India Museum and National Portrait Gallery, the Museum of Natural History, and other shows, more or less interesting; or to the Albert Hall, or out to the Crystal Palace, to hear good music; or,—and to my mind this is the most wonderful sight of all—to the Park on a fine afternoon in the season, that is between the 1st May, and the end of July, to see the carriages and horses, and the gay throng of the fashionable world, with perhaps a glimpse of the Prince and Princess of Wales, and even, as a piece of very good fortune, of the Queen herself.

Many of our readers may prefer the National Gallery to any other of the permanent sights of London. Considering that the collection has almost all been gathered during the present reign and some of the best pictures have been bought during the past few years, it does credit to the taste and munificence of the nation. Those readers who follow in the footsteps described by Mrs. Henry Fawcett, in Chapters vii. and viii. will be able to form a comparison between our galleries and some of the best on the continent. In two respects our collection stands out by itself. It contains very little or no rubbish. There are whole rooms in most of the foreign galleries which are not worth visiting. In Trafalgar Square you must, if possible, look at everything. Secondly, the pictures are in a very genuine and unsophisticated state. The great picture of all has this merit in an eminent degree. This is the Raphael from Blenheim; the only Raphael now known to exist, with the exception of one which hangs near to it, which has not been more or less repainted. The merits of this picture are not easily enumerated without the use of those technical terms which are so puzzling to the uncritical. But anyone may see the delicate beauty of the faces of the Mother and the Divine Child, the adoring expression of St. John, and the solemn piety of St. Nicholas. Nor should the exquisite landscape background be overlooked. Artists will recognise in the composition a kind of subtlety which exists in all Raphael's work; and while the drawing, with certain peculiarities, is almost faultless, the colour is most harmonious. The subtlety in composition is even more remarkably displayed in the little "Vision of a Knight," which is apparently an allegory, and represents a young man in armour asleep, Virtue and Vice seeming to offer him their several inducements. Some interpret the figures as War and Peace, some as Learning and Pleasure. The colouring is extremely brilliant and well preserved, but the composition is the most remarkable thing about this wonderful little picture. Every leaf on the tree, every feature in the elaborate background has been drawn in its proper place and painted so as to heighten to the utmost the effect of the whole design.

In the new galleries, as re-arranged, it is possible at last to do justice to this and other great masters. The row of pictures by Raphael is probably almost if not quite unrivalled elsewhere. Besides these, there are some dozens of paintings which a lover of art will think worth a very long journey. It is only necessary to mention a few. In a room we pass through to reach the Raphael collection, is the Suffolk Leonardo da Vinci, sometimes called the Holy Family of the Rocks. A similar picture is in the Louvre, slightly differing in some details, and, according to most critics, in a much less perfect condition. The group, which consists of four figures, is remarkable more for the beauty of the faces of the Blessed Virgin and of the angel than for any other quality; but the drawing cannot be surpassed. There is a certain want of colour, which detracts from the excellence of this lovely picture.

Next to the Raphaels and the Leonardo in importance are three great works to which the name of Michael Angelo must be applied. The raising of Lazarus stands No. 1 in the Gallery lists. It is known to have been designed by the great Florentine, but the execution of the painting has usually been attributed to his pupil Sebastian del Piombo. When, recently, a thick coat of dirt and varnish had been taken off, the colour was found to be splendid in tone, and in excellent preservation. Two other pictures, the Entombment and a Holy Family, are of interest chiefly to the student.

The Titians, at least two of them, are very fine, and a number are "school copies," to which the glorious Venetian's name has been conjecturally applied, but the Bacchus and Ariadne is among the great pictures of the world, and the *Noli me Tangere* is of exquisite beauty, but in a quieter key of colour. The visitor is strongly

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recommended to inspect most carefully those Italian pictures to which no artist's name is appended. Such pictures would not have been purchased had they not shown qualities so high as to make up for their want of a history. This is a hint which would be worse than useless in most galleries, but, so carefully has the collection been made, that among the very best are "St. Jerome in his Cell," "Venus and Adonis," "A Knight in Adoration," "The contest between Love and Chastity," and a good many more, all of which are by unknown artists, though their school may be easily identified.

Passing from the Italian rooms, we may briefly mention a portrait group by Van Eyck, which for harmony of colour cannot be excelled. It represents John Arnolfini, a Pisan merchant who lived at Bruges—where his house existed till lately—and married a Flemish lady, Jeanne de Chanany. The room and its furniture are portraits as well as the husband and wife, and Van Eyck records on the wall that he had been there himself in 1434. There is an interesting history attached to this marvellous picture. It was known to be in existence in 1524 when it belonged to Margaret of Austria. It can be traced to 1566 when it was supposed to have been lost on its way to Spain. At the battle of Waterloo a Colonel Hay was wounded and was carried into a neighbouring house where he was kindly attended, but lay long ill. This picture is said to have hung on the wall of his bedroom, and at his departure making very handsome pecuniary acknowledgment of the attention he had received, his grateful landlady presented him in return with the picture as a souvenir. That is one version of the story which is somewhat differently narrated in the catalogue. In 1842 the picture was bought by the nation.

We cannot linger here so long over many of the pictures; but look for a moment at the hideous and wonderful "Misers," by Romerswale, whose name had been forgotten till Mr. Weale discovered it among the parchments on the table; or at the noble Spanish picture of "Christ at the Pillar," though it has no painter's name, and though some people like better the splendid portrait of Philip IV. by Velasquez, which hangs near; or we can go across the hall and visit the English school. One landscape only, and one figure picture can we do more than name. Turner's "Crossing the Brook," is almost universally admitted to be the finest of his works. Unfortunately his oil pictures have too often faded and become discoloured, and others can never have been of the first quality, while many are simply grotesque. Yet the beauty of "Crossing the Brook," seems to grow greater as the years pass on, and the blue haze of the distant valley to rise and reveal new features. It is a view of the Tamar, the river dividing Devonshire from Cornwall, and was taken from high ground above Calstock, the bridge of which forms such a picturesque object in the middle distance.

One portrait must also delay us for a moment. It is one which needs no artistic education or critical faculty in the seer, but will charm everybody who looks at it. It is Gainsborough's portrait of Edward Orpin, who, more than a hundred years ago, was parish clerk of Bradford-on-Avon, in North Wiltshire, not far from Bath. A few miles further north, just at the boundary between Wilts and Somerset, is a handsome country house named Shockerwick, built by a wealthy tradesman named Wiltshire, who had been a carrier between Bath and London. Having occasion to take some pictures to London for Gainsborough, who was then living at Bath, he refused to receive any repayment from the artist. This generosity led to a friendship springing up between them, and Gainsborough visited at Shockerwick. It was the custom on Sunday evenings that Orpin should come over from Bradford and read the Bible to the Wiltshire household. Gainsborough was often of the party, and has immortalised the appearance of "The Parish Clerk," in a picture which remained nearly a century in the family of Mr. Wiltshire. In 1867, when the last Wiltshire of Shockerwick died, several beautiful Gainsboroughs, which were almost or quite unknown to the public made their appearance at Christie's, and this, the gem of the collection, was secured for the National Gallery. A landscape, "The Hay Waggon," with portraits of Miss Wiltshire and others, was exhibited at the Grosvenor Gallery lately, and came from the same house.

The Landseers of the National Gallery have a world-wide fame. The portraits by Sir Joshua Reynolds are of superlative excellence, and one in particular, the "Angels' Heads," a fanciful subject, is very well known. The celebrated "Snake in the Grass," the "Age of Innocence," and the "Infant Samuel," are all in this gallery, with many more by the same great artist.

A small collection of very choice pictures is in Buckingham Palace, and some rare portraits are to be seen in St. James's Palace, but neither is open to the public, a special order from the Lord Chamberlain being necessary. But two other and greater palaces, Windsor Castle and Hampton Court, are easily visited from London, and are especially interesting to anyone who loves pictures, for at Hampton Court he may see most of what remains of the old royal collection partially dispersed at the death of Charles I., and at Windsor a whole room is devoted to Vandyck, and there are many other pictures of note.

The visit to Hampton Court should be made on a fine summer's day. The galleries are closed on Friday, but the beautiful gardens and Bushey Park adjoining, are always open. The old state apartments are full of pictures, many of them very fine, especially some little portraits by Holbein, and the series by Sir Peter Lely, known as the Hampton Court beauties. The cartoons of Raphael used to be in a kind of corridor connecting the king's and queen's apartments, but they are now at South Kensington. Their place is occupied by a series of nine pictures by Andrea Mantegna, painted in or about 1492. Mr. Law, to whose accounts of the *Palace* and of the *Pictures* I must refer the reader who wishes for further information, calls these paintings, old, faded and retouched as they are, "Mantegna's greatest and richest work, the glory of Hampton Court, and one of the most artistic treasures of the English Crown."

Architecturally speaking, this palace is full of interest and beauty. About half of it dates from the reign of Henry VIII., and the rest from the reign of William III. The earlier part is in the Gothic of that period and comprises the famous hall, hung with lovely tapestry, several suites of apartments, including those built for Queen Anne Boleyn, and the chapel. These are not all shown to the public, but the hall and an adjoining chamber are generally open. The newer part of the palace was designed by Wren, for William and Mary, and like the older part, is mainly built of red brick with stone dressings. The observant visitor will admire the skill of the carver in many places, and the ornaments with the combined initials of the King and Queen, all of which are throughout designed with a view of setting off the beauty of the whole building, and not as in too many modern houses, of concealing its defects. The garden fronts and the Fountain Court are very complete as examples of Wren's powers. The principal entrance, by which the visitor obtains access to the state apartments is under a colonnade of classical design and very incongruous with the Gothic architecture surrounding it, but very picturesque, in consequence, to the eye of an artist.

The history of Hampton Court connects it with many interesting personages. Cardinal Wolsey obtained a lease of the site from the lord prior of St. John at Clerkenwell in 1515, and for eleven years amused his leisure moments in improvements and magnificent buildings, "to show," as he afterwards said to his covetous master, "how noble a palace a subject may offer to his sovereign." Henry made very little show of modesty in the matter, and after Wolsey's disgrace lived here with his new Queen Anne (Boleyn). The palace was the birth place of Edward VI., when Queen Jane (Seymour) died. Here Queen Katharine (Howard) was arrested, and her screams are said still to be heard in the passage adjoining the Chapel. Charles I. was at Hampton Court under a kind of restraint, and contrived to escape to a boat on the Thames. Cromwell caught his fatal illness while living here. We have seen how much William III. did for the place, and Queen Anne lived in the palace very frequently. The interesting and formal gardens on the south side must have been laid out at that period, but the famous vine was only planted in 1769, after Hampton Court had ceased to be the habitual residence of royalty.

There are certainly no places of public resort more attractive, and the visitor especially if he comes from far should endeavour to see the great avenue of Bushey Park, which close adjoins Hampton Court, while the horse-chesnut trees, of which it is wholly composed, are in flower.

Hampton Court is twelve miles from London ; and Windsor is more than half as far again, but on the whole is quite as accessible, owing to the number of railway lines which run to it or pass near it. There is no place in England more impressive than Windsor Castle. Except when the Queen is actually in residence it is open to the public, and the wealth of beautiful pictures would in itself, apart from all associations, make a visit very interesting. But there is not much of architectural or historical importance in the state apartments, which at the oldest, only date from the reign of Charles II. This wing of the Castle, which as early as the reign of Edward III. was the royal nursery, was rebuilt by Wren, and was long known as "the Star building," from a representation of the badge of the Garter on the northern front. It was remodelled and made "Gothic" by Sir Jeffrey Wyatville, under George IV., and contains some very fine rooms. The basement, which, of course, the visitor does not see, is very ancient and at least one chamber may be held to date from the time of Edward III.

Those parts of the castle, however, which may always or almost always be visited are by far the most interesting and beautiful. Windsor Castle may be described as comprising two great wards, the Upper and the Lower. The Upper is to the East, the Lower to the West. The Upper Ward was probably first built by Henry I., and was rather a fortification than a residence, the King's house until the reign of Henry III., being in the Lower Ward. The northern side of the Upper Ward is now occupied by the State Apartments already mentioned, and the East and South sides by the private apartments of Her Majesty, while the great mound of the Round Tower, laid out as a garden, forms the Western side. The Round Tower, which was mainly built by George IV., is well worth a visit. From the summit, it is said, twelve counties can be descried. The mound is very ancient, probably Saxon. Earl Harold, afterwards King, killed at Hastings, resided here, probably in a wooden house. Edward III. hastily "ran up" a tower for his "Round Table" when he founded the order of the Garter; and what remained of it was renewed, and raised to its present altitude by Wyatville.

In the Lower Ward the chief feature is the Chapel of St. George. This magnificent building as we see it now chiefly dates from the time of Edward IV., and the smaller chapel of St. Edward to the eastward from the time of Henry VII.; but both have been much altered and renewed; and Wolsey's tomb house, as the small chapel was long called, has become the Albert Memorial, and has been completed and decorated in a style of the utmost magnificence. Under it, but approached from St. George's, is the royal vault, where George III. and many of his descendants lie entombed. The visitor should not fail to observe the roof, with coloured and gilt bosses, and the plates of the Knights of the Garter in their stalls, the most ancient order of chivalry now surviving.

North of the chapel are two or three small but very picturesque courts, which should on no account be neglected, as they contain all that is left of the ancient palace of Henry III. Westward are the Horse Shoe Cloisters, which have been wholly transformed within a few years, but still retain some picturesque features, if few of antiquity. The North Terrace which extends along the brow of the cliff passes under the windows of a charming Elizabethan building, in which is the Queen's library. The view from the terrace is unsurpassed in England. The visitor will find it hard to tear himself away, but he has yet to see the Long Walk, a magnificent avenue connecting the Home and Great Parks, commenced under Charles II. It leads to the summit of Snow Hill, a distance of two miles and three quarters. Here stands Westmacott's Colossal Bronze Statue of George III., and from here a beautiful view is obtained of the Castle and town, with Eton College and its Chapel in the back ground. The Great Park, backed by Virginia Water, Ascot Heath, Swinley, Cranbourne Chase, and other large tracts of woodland, extends almost to Sandhurst, and is full of beautiful scenery and variety.

The following summary of the history of Windsor may be acceptable to the reader. It is from the volume published by Messrs. Seeley:—

"At Windsor Henry I. married his second wife, and Henry II. compared himself to an eagle pursued by his own offspring. Here John came when Magna Charta was signed; and here Edward III. was born. Here the first chapter of the oldest and noblest Order of European Knighthood was held. Here the Black Prince married the Fair Maid of Kent, and Froissart saw the King mourning for Queen Philippa. David Bruce and James Stuart, Kings of Scotland, were here imprisoned, and the young Earl of March, heir to the English crown. In spite of his father's gloomy foreboding Henry VI. was born at Windsor, and passed every winter in the castle while he was a child. His holy shade lingers rather at Eton, beyond the river, than in his birth-place. Edward IV. is more conspicuous at Windsor. He made the beautiful chapel, and lies buried in it himself, the first of a long line of kings; but Richard III. brought hither the body

WINDSOR CASTLE FROM THE THAMES

of Henry VI., and the rivals rest side by side. Henry VII. vaulted the chapel and built the tomb house for himself, and though he is buried at Westminster, Henry VIII., his son, lies under his father's chapel at Windsor "by his true and loving wife, Queen Jane." Cranmer, Ridley and Latimer were at Windsor on their last melancholy journey to their fiery martyrdom at Oxford. The great Elizabeth loved the place, and did not Shakespeare immortalize the *Merry Wives of Windsor* at her Grace's express command? Her successor was often here and made that strange character, Antonio de Dominis, Dean. One snowy afternoon in February, 1649, the White King's headless body was laid without funeral rites in the grave of Henry VIII. Cromwell saved the castle, and Dean Wren saved the records of the Garter, and Wren's more famous son built what are still the state apartments for Charles II. William III. was at Windsor when the poor boy, his nephew, the hope of the nation, celebrated his last birthday, and almost on the morrow sickened and died. Queen Anne pursued the deer in the park in a one-horse chaise; and Cumberland, under the first Georges, retired to his ranger's lodge to sulk. Windsor was in decay when George III. made it his chief residence, and every one remembers Madame D'Arblay's account of the discomfort endured by the royal family and their courtiers. George IV. lived in a lodge in the park while Wyatville made the old castle what it is now, and gave it the outline so familiar to all Englishmen."

To this we may add that George IV. died in the chamber at the north-eastern corner of the castle in 1830, William IV. in the same room in 1837, and the Queen's Consort, the lamented Prince Albert, by a strange coincidence, in the self same chamber on the 14th of December, 1861.

Besides Hampton Court and Windsor, the neighbourhood of London contains many places of the greatest interest and beauty. Although there is not a single old castle in Middlesex except the Tower, nor a single abbey except Westminster, and although both this county and its nearest neighbours are remarkable for the poorness of the old churches which remain, yet there is more to be seen in a day's walk near London than in any equal area elsewhere. In bad weather the visitor who wants to economise his time had better stay in town, and keep his country visits for fine days.

The stranger in London is naturally bewildered at first by its size, but when once a few geographical facts about it are mastered, it is found that there is no place easier to get out of in every direction, and thus it therefore forms one of the most convenient of possible headquarters during an English visit. We can run down to the south coast in a single hour by railway. It is not a quarter of a day's journey to Oxford, or Cambridge, or Stratford-on-Avon; it is not half a day's journey to Portsmouth or Bristol; it is a short day's journey to Liverpool, or a long one to Glasgow and Edinburgh. The smallness of England, the frequency of large towns, the enclosures everywhere, the almost complete absence, except in remote places, of wide open spaces, are the features of the country which, even more than its antiquity, impress one most on fresh arrival from the Colonies. That from so small a mother so great an offspring should have gone forth to people the earth, and that the English language should be more widely spoken than any other, are the results of causes which began to work in this island some fourteen centuries ago, causes which some have endeavoured to classify as Truth and Liberty, but which are the ideas implanted in every Englishman's mind, whether he be born in the Mother Country or in one of her Colonies.

The visitor from the Antipodes finds the foggy atmosphere of London oppressive, except in the height of summer; but he should endeavour to time his visit so as to see the great city in what is locally called "the season," that is, during the session of Parliament. The country visit should be made before or after, but no one can be said to know what London is like who has not stood in Hyde Park on a fine afternoon in May or June, and watched the display of wealth and taste there exhibited; and every one will wish to attend a sitting of the Houses of Lords and Commons, to see the judges on the bench, to hear the great speakers and preachers of the day, to visit the Royal Academy, and to make a pilgrimage to the tombs of the mighty men of old time who lie buried in Westminster Abbey and St. Paul's. In the autumn you may attend cattle shows and the congresses of learned societies in the country; but London at that time of the year is "out of town," and though as full in reality as ever of people, does not offer to a stranger those attractions which are best calculated to make his visit pleasant and interesting.

The environs of our great city, as I have remarked, contain few buildings of high architectural pretensions; but, in proportion as the scene is homely, the events which give it celebrity are often among the most important in our annals. Within a short afternoon's walk we may visit two palaces, Greenwich and Eltham, for example, whose history, if fully written out, would be the history of England for perhaps three hundred years. At Greenwich was born, in the closing years of the fifteenth century, the boy who was destined to change the religion of his country, and here, eighteen years afterwards, he entered into the unsuitable marriage which was the ultimate cause of the Reformation. Here, too, the son on whom Henry rested all his hopes gazed his last on the world he had hardly entered, and if we could call up the picture of the old palace by the river's bank, and join the crowd who assembled that summer afternoon in 1553, when the rumour had gone abroad that the king was dead, we might see the thin pale face of the dying boy, raised for a moment to the latticed window to show his people that Edward VI. still reigned over them. Here, too, more than a hundred years later, we might have seen thousands of loyal subjects, all lately Republicans, streaming through the park and up the hill, and swarming over Blackheath, on their way to welcome home King Charles II. from his long exile. It would be easy, in short, to devote all the space at my command to the associations of this one place.

Scarcely second in interest is Eltham and its palace. The long-roofed barn was once the great banqueting hall of kings. Here we may sit with Froissart, and see King Edward's guests come in, knights of the newly-founded order of St. George, and ladies dressed in robes covered with their husbands' armorial bearings, and mitred abbots with their cowled attendants, and pages, and minstrels, and tall guards bearing halberds. With the building itself standing, it is not so difficult to realise what the scene may have been like. Here in this hall two Parliaments at least were held; and it was customary for all our kings to spend Christmas at Eltham from the time of Richard II to that of Henry VIII.

The park was broken up at the Commonwealth, and eventually divided. The central portion gives its name to one of the principal events of the sportsman's year, for Mr. Blenkiron kept his stud in the Middle Park, and here, after his death, Blair Athol, one of his horses, was sold for no less than £13,125, the highest price, up to that time, ever given for a racehorse.

Most excursionists seem to prefer to go in a southerly direction when they take a day out of town. But there are many points of interest north, east, and west as well. If we go out towards "merry Edmonton," along the route traversed by John Gilpin, we pass through Tottenham, and are reminded that, equally with the kingdom of Scotland, this manor was the inheritance of a family whose co-heirs were Bruce and Baliol. Bruce Castle is a school, standing among fine old trees; and its scholars will tell you with pride that here for a time Sir Rowland Hill was master, and dated from Bruce Castle, the letters and pamphlets by which at length he succeeded in convincing our rulers of the advantages of the penny stamp. Izaak Walton and William Cowper have given celebrity to the name of Edmonton, and it needs nothing more to add an interest when we remember that in Bay Cottage Charles Lamb lived and died, and that he lies buried in Edmonton Churchyard close by.

A little further west is Edgware, an ancient town on an ancient road—a road, indeed, so ancient that there are good grounds for believing it was in use before the Romans came into Britain. The Saxons named it the Watling Street, being the name they gave to the Milky Way in the heavens above, for the road runs in a north-westerly direction, and may still here and there be traced all the long distance from Dover to Chester. At Edgware we may see the blacksmith's shop where Handel conceived an immortal melody. The smith was parish clerk at Whitchurch close by, and bore the name of William Powell, and if you go to Little Stanmore, as Whitchurch is commonly called, you will not only see his grave, with a bar of the "Harmonious Blacksmith" for an epitaph, but may also see the very organ on which Handel played in the very church where so many of his compositions were first heard. If Eltham reminds us of Blair Athol and his extraordinary price, Whitchurch should remind us of Eclipse, the fastest horse on record. He died and was buried in Canons Park, where his grave is still pointed out.

If we turn our steps westward the objects of interest are most numerous, we have seen what Hampton Court and Windsor contain. Nearer London, the oldest inhabited house in England is Fulham Palace, which the Bishops of London have had for a villa ever since there was a bishop. At Chiswick House, a little further on, two great statesmen drew their last breath, Fox and Canning; and across the river at Putney, a greater than either, William Pitt, died in 1806, at Bowling Green House, near the heath. At Richmond, all but a fragment of the palace is gone, where Henry VII. died, and where Henry VIII. entertained the Emperor Charles V.; but the park, the making of which was one of the most unpopular acts of the unfortunate Charles I., remains the joy of all lovers of English scenery. But to any one who has read history intelligently and who is content with the green lawns and old trees, with shady lanes and primrose banks, with little churches and quaint epitaphs, with stately red-brick houses and arching avenues, there is no part of England in which they more abound than within ten miles of London. The ancient church at St. Alban's is one of the longest single buildings in the world; but there is a charm about the more obscure and less visited spots, which is wanted where crowds assemble; and not even the Alps are to my mind so beautiful as the ordinary English landscape, with its verdure, its antiquity of association, and its quiet homeliness.

It would be impossible even to enumerate all the various objects and matters of interest which await an Australian visitor to the old country. This task I leave in other hands. Suffice it here to say that he will encounter at every turn the marks of the efforts of his race in each branch of human progress, and, recognising the source from which he has derived that civilisation and freedom, civil and religious, which he enjoys in the Greater Britain, he will learn to sympathise with his kindred "at home" under those difficulties attaching to the old society, which it is so important for the unity of the Empire that Colonists should understand.

CHAPTER IV.

FROM LONDON TO GIBRALTAR.

BARKING.—EASTBURY.—TILBURY DEEP WATER DOCKS.—TILBURY FORT.—THE NORE.—THE CHANNEL.—FIGHTS IN THE CHANNEL.—THE BAY OF BISCAY.—BATTLE OF CAPE ST. VINCENT.—THE BATTLE OF TRAFALGAR.—GIBRALTAR.

THE route both out and home of the Orient steamers is *via* Suez; calling at Gibraltar, and Naples.

Not the least of the interesting or amusing incidents of the voyage are the places sighted or visited. At some of these it is well worth while for those not pressed for time to remain for the interval between two or more steamers. We propose, therefore, to give a brief but sufficient itinerary of all the routes followed by the Orient Steamers.

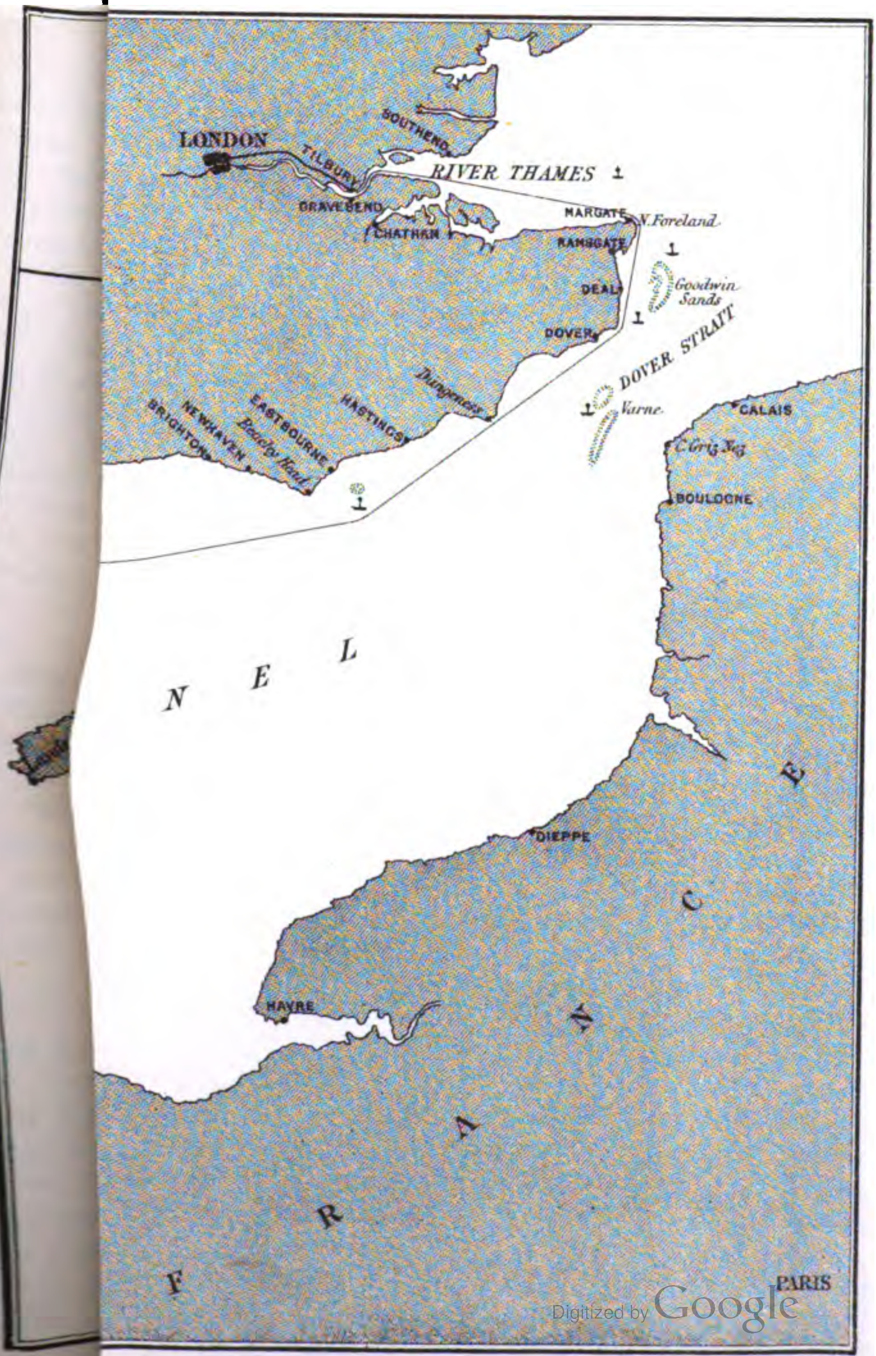
Fenchurch Street to Plymouth.—First comes the leavetaking of friends at railway stations and on piers, the vessel leaves the docks, and the voyage is commenced when the screw of the big ship takes its first turn or two in Gravesend Reach—so soon as "all for the shore" are out of her. In the hurry of the moment, the passenger, travelling from Fenchurch Street to Tilbury by train, will have little time to survey the rich pastures behind the tidal embankment, where cattle and sheep are fattened for the London market with such succulent grasses, that as much as £6 or £7 rent per acre has been paid for the right of grazing.

There is not much on the way to attract the eye. At Barking there is an old church, with a fine tower, but we see no remains of the famous abbey, though some fragments still exist. Barking Abbey was founded by Erkenwald, bishop of London, about the year 670, and he made his sister Ethelburga, the first abbess. The Lady Abbesses of Barking in after times ranked as peeresses of the realm. When Henry VIII. suppressed the monastic houses, Barking was valued at something over £1,000 a year, equal to at least twenty times as much now. The site of the abbey is a market garden. A little further on, but on our left, is a fine old red brick manor house, called Eastbury. Lord Monteagle was owner of this house when he received the famous letter which led to the discovery of the gunpowder plot.

At Grays properly Gray's Thurrock, we obtain a fine view of the Thames, with Greenhithe and Northfleet, on the opposite side. Several training ships may be observed moored at intervals along the bank, and the strange looking hospital formed of huts on the deck of the unsuccessful double channel steamer, "Castalia." In a few minutes more we are at Tilbury.

The Tilbury Deep Water Docks, which the largest ships of the Orient Line can enter at any state of tide, are among the most colossal. undertakings of the day. They were opened for ships on 17th April, 1886, by Mr. Dobree, the chairman of the East and West India Dock Company, having been a little more than four years in course of construction. The tidal basin, which forms one of the chief features of the dock, has an area of 19 acres, and a depth at low water spring tides of 26 feet. In the basin are two quays, each 600 feet long, and a coaling jetty with moveable hydraulic cranes. A shed on the south side accommodates passengers, and opens on the railway station. Locks 80 feet wide, and 700 feet long, lead to the main dock. The gates are each 49 feet in width, and weigh about 240 tons. They are opened and closed by hydraulic machinery. Four dry docks are provided, large enough for any ship, and the water can be pumped out to the amount of 12,000,000 gallons in an hour. The pumping house where this operation is performed contains four centrifugal pumps of sufficient capacity to to raise 650 tons of water per minute. This engine and the hydraulic engine by which all the hydraulic machinery is worked, are on a gigantic scale, as are the hydraulic travelling cranes, which are 61 in number, and simplify amazingly the task of loading or unloading. Each crane can lift 30 cwt. at the rate of 180 feet per minute, and can swing the full load round the complete circle in 40 seconds. But the floating steam crane seems to be the greatest of all the marvels to be seen here. It is aptly called "the Leviathan." The crane is mounted on a floating stage or vessel 110 feet long, and resembles what are called shears. It is designed to lift and swing 50 tons at 25 feet, or 45 tons at 30 feet, and is capable of placing masts over 100 feet high in a ship of 50 feet beam. The crane revolves, and is controlled by one man from one spot under the direction of the captain. The vessel can be run alongside a ship lying at her berth, and can take out or put on board, heavy machinery or guns, while the ordinary operations of loading or discharging the ship are going on from the quay.

Close to the Docks is the picturesque Tilbury Hotel, designed in a jacobean style by Mr. Gruning, full of pretty chambers and saloons, many of them with views across the Thames to Gravesend, and the Kentish Hills. The houses of the


LONDON
TILBURY
SOUTHEND
RIVER THAMES
GRAVESEND
CHATHAM
MARGATE
N. Foreland
RAMSGATE
Goodwin Sands
DEAL
DOVER
DOVER STRAIT
Dungeness
HASTINGS
EASTBOURNE
Beachy Head
NEWHAVEN
BRIGHTON
Varne
CALAIS
C. Griz Nez
BOULOGNE
N E L
DIEPPE
HAVRE
F R A N C E
PARIS

superintendent and other officers of the Dock Company, are designed to harmonise with the Hotel.

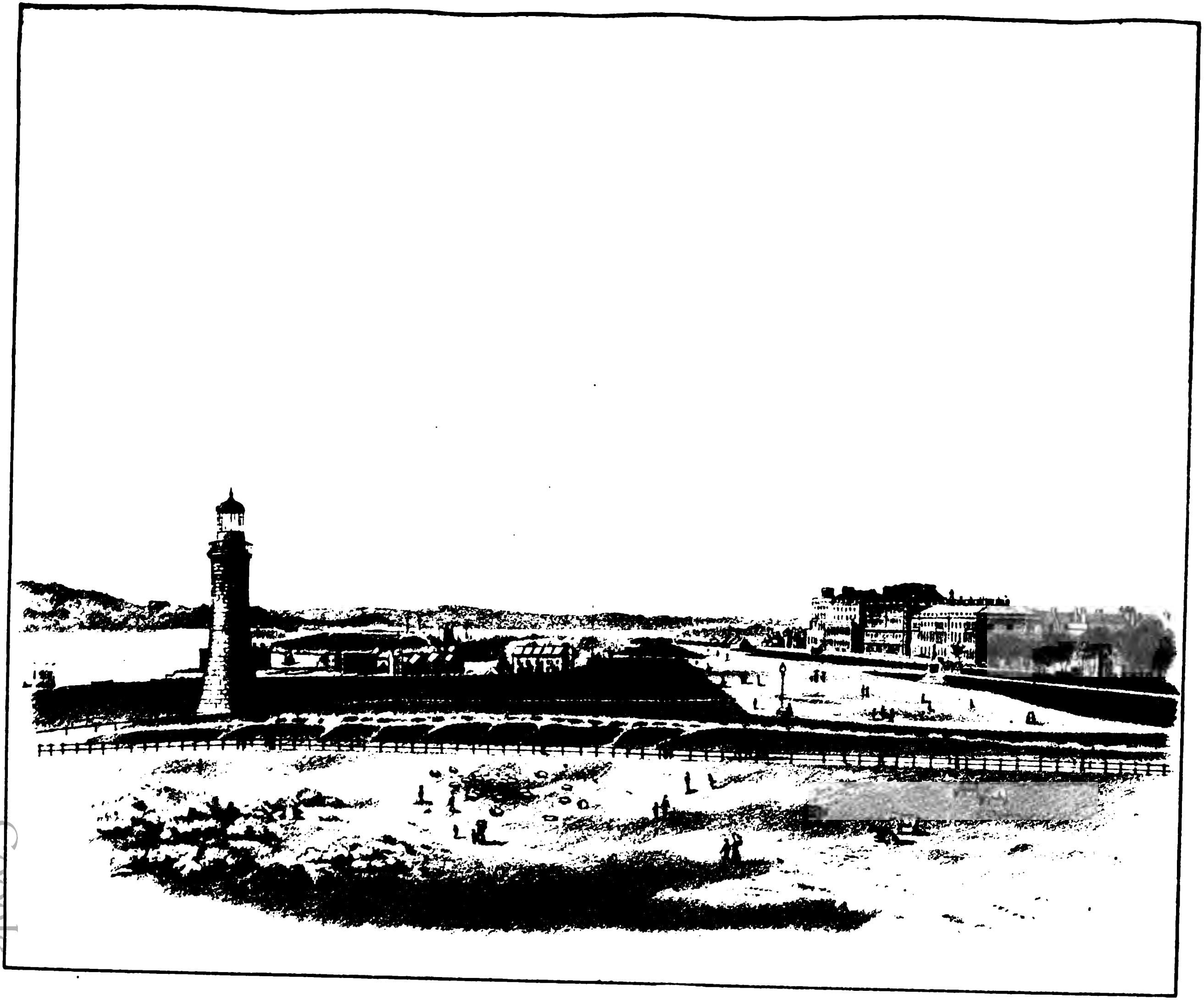
Tilbury Fort, is beyond the railway station, and bears monumental witness of England's determination to keep out the invader. The gate was built from a design by Wren, under the directions of Samuel Pepys, the diarist, in 1672. The chapel is as old as the time of Queen Elizabeth, who, it will be remembered reviewed her troops at Tilbury in 1588. As the steamer turns out of Gravesend into Lower Hope Reach, on the right and left will be seen the low-lying, effective modern fortifications that command this entrance to the Port of London. Guided through the Lower Hope by the Mucking Lighthouse, which stands at the northern end, the steamship next enters Sea Reach, on the north side of which are the ruins of Hadleigh Castle, picturesquely situated on the summit of a hill. The ancient church of Leigh with its square tower is also very conspicuous.

Soon on either hand the land recedes, and by the time the long pier and villa-studded shore of Southend are passed on the left, the mouth of the Medway river appears on the right hand, guarded by the fortifications of Sheerness and Isle of Grain. A light ship marks the Nore or New Weir, which is mentioned as far back as the time of the Norman Conquest as being in the Medway, and marks the limits of the Thames Conservancy. From this point we are out of the river. Further inland, the heights of Chatham tower over one of the most important of our national dockyards. On the light-ship itself is seen the short but pregnant word "Nore," calling up recollections of the past naval history of England. Shoeburyness, a low point forming the north point of entrance to the Thames, is seen on the left. Here are large Government works for testing great guns, the extensive Maplin Sands which lie eastward of the Ness, affording great facilities, and being buoyed off for artillery ranges. On the right, in the distance, is the Isle of Sheppey and the coast of Kent, with Herne Bay, and "the Reculvers," two towers on a low earth cliff, being all that now remains of what was an important military station in the time of the Romans. The chalk cliffs which form the coast line of the North Foreland now begin; Westgate and Margate are passed, and the Foreland, well marked by the conspicuous octagonal lighthouse on the high land, and the Moro Castle on the edge of the cliff having been rounded, the substantial piers and handsome granite lighthouse of Ramsgate will now be seen. The course then lies through the Gull Stream, the passage between the coast and the Goodwin Sands. If it is low water "this very dangerous flat and fatal, where the carcases of many a tall ship lie buried," will be plainly seen from the lofty deck of the Orient Steamer. The Downs, a well-known anchorage, Deal, and Walmer are passed; the South Foreland and Dover with its cliffs and castle are next rounded, and the steamer fairly enters the English Channel.

The first point passed is the remarkable shingly flat of Dungeness with its conspicuous lighthouse. This is succeeded by the high down of Fairlight at the foot of which lie Hastings and St. Leonards. The well known and remarkable promontory of Beachy Head, with its lighthouse, and seven white cliffs named the seven sisters, is next passed. Eastbourne lies at the foot of the Head, while to the westward are Newhaven, Brighton (the Sea-London), Worthing, Littlenampton, and a long succession of watering places. Next, the picturesque outline of the Isle of Wight rises boldly to protect the anchorage of Spithead, Portsmouth with its dockyard, Southampton with its steamer trade, and Cowes and the Solent, the centre of the yachting world. Passing Bonchurch and Ventnor, basking in the sunny "chines" of the Undercliff, with St. Catherine's point and lighthouse, we see the Isle of Wight terminate westward in the chalk "Needles," and the steamer, with a distant view of Bournemouth and St. Alban's Head, steers towards the curious peninsula called Portland Bill. Here a mass of rock, rising like Gibraltar, is connected with the mainland by an isthmus of shingle cast up by the western drift; a breakwater constructed parallel with this isthmus forms the important and extensive refuge-harbour of Portland. Off Portland there is a great meeting of tides over an uneven bottom, causing strong eddies. This is known as Portland Race, and in tempestuous weather when wind and tide are opposed, the agitation is so violent as to render the Race dangerous to small vessels.

From Portland a bee-line is taken across the West Bay, to the Start promontory and lighthouse. Northward of this headland lies Torquay, and the picturesque entrance to the Dart. Following along this magnificent rocky coast to the north-west the steamer enters Plymouth Sound.

Plymouth.—The historical associations of Plymouth include the story of the defeat of the Spanish Armada, that grand vindication of national independence and liberty, civil and religious. These memories of our Sea-Fathers Drake, Hawkins, and Frobisher carry us back to the days of discovery; and the foundation of the British colonies. The *Mayflower* leaving Southampton in August, 1620, after putting into Dartmouth, finally sailed from Plymouth on the 6th September to found New Plymouth in America. From Plymouth Cook and Vancouver sailed to give England New South Wales in the East, and British Columbia in the West. The famous harbour of Plymouth thus well claims the title of the cradle of Britain's Colonial Empire; and voyagers may do worse than sojourn for a few days in this neighbourhood. The locality abounds in objects of interest and beauty. Anchored in the Sound the



THE HOE, PLYMOUTH.

ship seems to lie in the middle of a magnificent natural amphitheatre. The scenery of the Hamoaze estuary and of the meandering Tamar and Plym are backed by the hanging woods of Mount Edgcumbe, and the higher moorlands of Devon and Cornwall. The harbour and dockyard are for extent and for variety of work unsurpassed by any in the world. It is not difficult to obtain admission to most portions of the Government works.

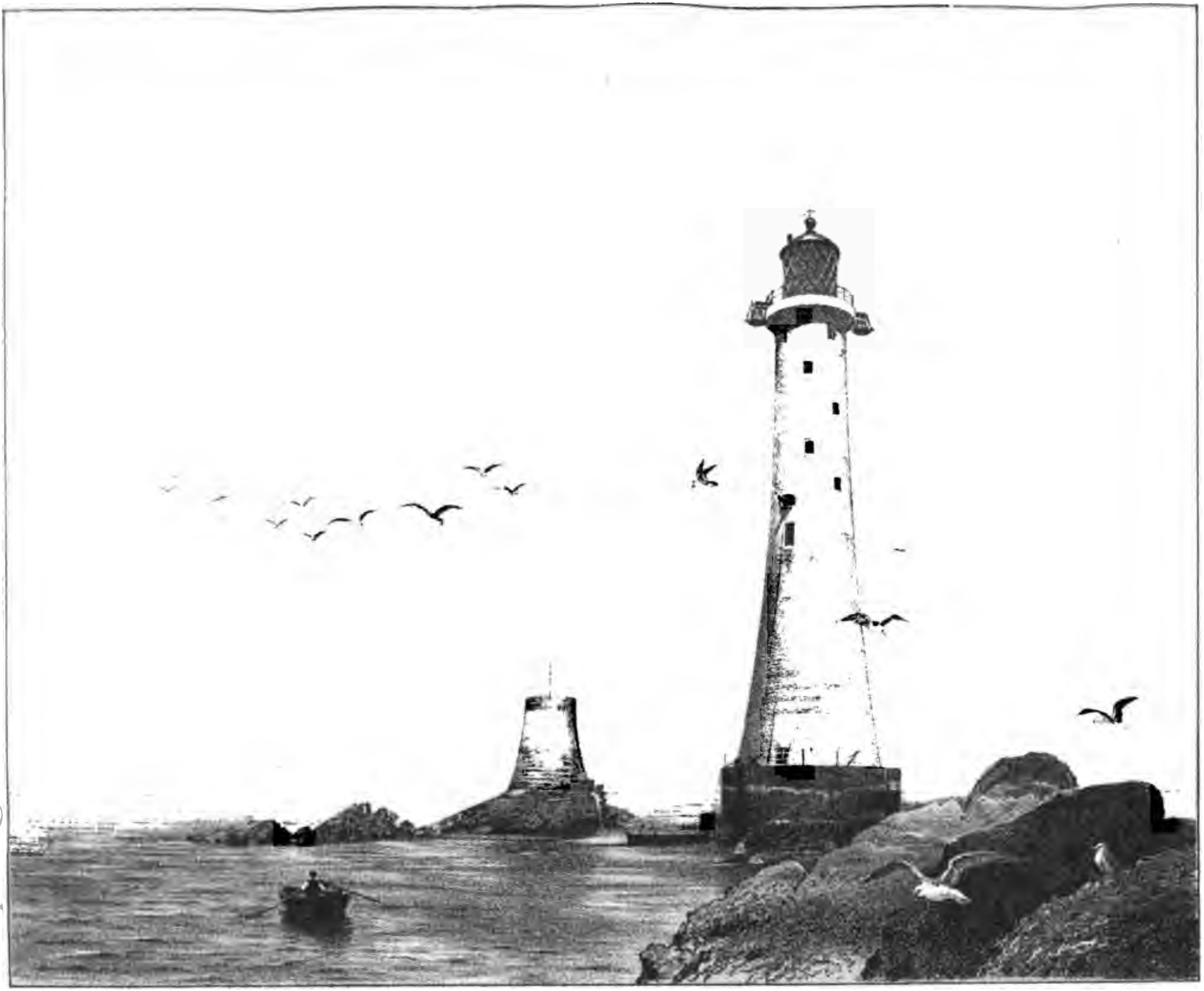
The fortifications, as at Chatham, Portsmouth, and Milford Haven, are numerous and substantial; and it will be seen at once that Great Britain is resolved on maintaining inviolate her various great naval arsenals. The Royal West Railway Bridge across the Hamoaze (Brunel's masterpiece) is worthy of note, but the object of greatest interest is the enormous breakwater which has converted Plymouth Sound into an almost land-locked harbour. It is just a mile long, and its total cost approached £2,000,000. There are many notable buildings in Plymouth, and for architectural interest, the new Town Hall is well worth inspection. It is an elaborate and magnificent structure, in size, beauty of finish, and general result rivalling the most celebrated of the old stadthouses of the Netherlands. Churches, theatres, museums, libraries, hospitals, and numerous other public buildings, new as well as old, ornament the towns of Plymouth and Devonport, and are evidence of the public spirit and prosperity of the 200,000 inhabitants.

Ten miles from Plymouth Sound the Eddystone rocks are passed. Rising abruptly from the bottom, in the midst of deep water, they have long been known to navigators. "A gentleman of Essex, of a mechanical turn" began in 1696 to construct a lighthouse on these rocks. In four years this Mr. Winstanley completed his work; but three years afterwards, in a terrific storm, he and his lighthouse were washed away together. Four years later a new lighthouse was determined on and erected; it was composed chiefly of wood, and was destroyed by fire in 1755. In 1757 Smeaton began his great work; and for more than a century his well-constructed stone lighthouse had successfully withstood the buffeting of the waves; but though sound in itself, the untiring sea had sapped its rocky foundations, and it has now been replaced by the New Eddystone lighthouse. The good folk of Plymouth have erected the old lighthouse on their magnificent marine promenade, the Hoe, where it stands in sight of its former triumphs and in full view of its successor. The new light is 133 feet above the water, and has an illuminating power equal to 700 candles.

From Plymouth, the course steered is across the Chops of the Channel. On the right, the high moorlands and magnificent rocky coast of Cornwall are soon lost to sight. Little is seen of France except that Ushant is sighted. The steamer ploughs her way over the scene of two of the greatest naval contests France and England have ever fought. Ushant itself is a steep craggy island, about 200 feet above the sea, inhabited by fishermen, and interesting as the last foothold of heathen idolatry in Europe. Even so late as the seventeenth century Christianity had failed to penetrate to it.

Ushant, and Cape Finisterra in Spain, are the horns of the Bay of Biscay, and they are as many miles apart as there are days in the year. Into this hollow Bay is perpetually driven the great westerly swell of the North Atlantic; the tides are strong, and the result is the tumult of waters that has given the Bay its unenviable notoriety. Nevertheless, unless the wind be violent, the swell has little effect on the great powerful modern steamer, which speedily carries the passenger in one day across the dreaded Bay. As, except great waves, there is little to interest the passenger, we may insert here some notes by Mr. David Hannay, of naval battles in these waters and the Channel:—

"The route of the Orient steamers goes over those great naval battle grounds of England—the Channel and the Mediterranean. From the mouth of the Thames to the mouth of the Red Sea they pass by, and are often within sight of spots on which English fleets have fought victoriously, or, though only once or twice, have fought not so successfully. At Chatham, for instance, if one cared to remember it, the Dutch once burnt some of our ships, and, as Pepys has noted, the trumpeter of the Ruyter's flag ship blew "Joan's placket is torn," which was a kind of crowing and flapping of the wings habitual with the old seamen of all nations. Once out of the mouth of the river you enter on a stretch of salt water full of the memories of battles. Not very far to the left, as you go eastward, Blake defeated the Dutch under De Witt and De Ruyter on the 28th September, 1652. In the straits of Dover there has been much good fighting done. The defeat of the French under Eustace the Monk by the men of the Cinque Ports, in 1217, is ancient and obscure. It is not easy to know what either the ships or the tactics were like though it is on record that the English fleet luffed to gain, or at least to keep the weather gage, which seems to show that the seamanship of our mediæval ancestors was not so primitive and barbarous after all. The encounter between Blake and Tromp on the 20th May, 1652, which began the first Dutch War is better known. Calais sands have seen part of the two longest drawn out, and most vital pieces of sea fighting this nation has ever done. In 1588 the Spanish Armada came blundering into Calais roadstead after being plagued, and out-manœuvred, and bedevilled by Elizabeth's fleet. They were driven out by fire ships to their destruction in the northern seas. In February of 1653, Tromp came to an anchor there after the three days' fighting which began off Portland with Blake, Dean and Monk. He being a



EDDYSTONE LIGHTHOUSE

better seaman than the Spaniard, and having a better fleet to command, slipped away quietly under cover of night, and brought the bulk of his ships safe home. Before getting into the Channel you leave on your right the scene of Blake's defeat by Tromp, in November, 1652. The English were overpowered by numbers, though some of them at least fought splendidly. This is what is commonly called the battle of the Ness, because it ended off Dungeness. Further on is Beachy Head, where Torrington with a combined fleet of Dutch and English, was defeated by a greatly superior French force under Tourville in 1690. A great deal of exaggerated rhetoric has been expended on this affair, but it was a defeat, though by no means a disgraceful one. In mid channel, and to the left of an outward bound ship lies the scene of what is commonly called the battle of Cape La Hogue, but was once named the battle of Harfleur, where in May, 1692, Admiral Russel avenged Beachy Head. As you approach Brest the scenes of battles come thicker together, and "off Ushant" there has been much fighting. To watch French fleets at Brest and catch them if they came out was a standing duty with English seamen, and it inevitably happened that battles came to be fought near the great French naval port. The, in some respects, unparalleled victory of Sir Edward Hawke, which we call the battle of Quiberon, and the French *la journée de l'ile de Conflans* was gained over a fleet escaping from Brest. It was with the Brest fleet that Admiral Keppel fought his "battle off Ushant," in 1778—the battle which is chiefly memorable for giving rise to such a monstrous progeny of court martials and rabid naval quarrels. A very different battle off Ushant was the "glorious 1st of June" (1794), when Lord Howe after some days of manœuvring and partial engagement did at last succeed in smashing into the French fleet of Villaret Joyeuse, and completely defeating it. If this battle were remarkable for nothing else it would deserve to be remembered as having produced the most brazen, and vivacious of historical lies—a lie so big, so picturesque, so brightly coloured, so absolutely baseless, that it becomes respectable as a work of art. This, it is almost needless to add is the story of the sinking of the *Vengeur*. Frenchmen believe to this day that the ship went down with tricolor flying, and her crew shouting *vive la Republique*, and refusing to surrender, whereas in point of fact she had surrendered and was actually in possession of an English prize crew, and her captain was a prisoner on board H.M.S. *Culloden*, eating cold meat pie when his vessel sank. It would be impossible to tell here the history of the long centuries of sea fighting in the Channel; the battles of fleets, the frigate actions, the attack and defence of convoys, the privateering on both sides, for at that work the French were always very good. All we can do is to remind the traveller that it has been done in time past, and may have to be done again. Then, too, when the fighting is recorded do not let us forget the blockades. The men who cruised for months in front of Brest without a break in their lives of weary patrolling, and who faced every change of weather, every extremity of storm, and density of fog, with some of the most dangerous coast in the world under their lee, helped to establish the naval power of England as effectually as the fighters of the memorable battles. At all times, even in the longest wars there were many officers and men who never had the luck to be present at a brilliant action, but there were very few who had not done their spell of the ungrateful work of blockading."

Soon Cape Ortegal and Cape Finisterra in Spain, are sighted—Coruna recalls Sir John Moore; and the passenger looks down into the deep blue sea, feeling that somewhere beneath him rests the unfortunate turret ship *Captain* with her crew of 500 men.

Within thirty-six hours of Plymouth a different climate has been entered: balmy warmth has replaced cold and bracing airs. Arosa and Vigo Bays are next passed, the mountainous land at the back, broken by cultivated valleys, forming a pleasant landscape. Oporto, the second city in Portugal, built upon the north bank of the Douro, about two miles from the sea, lies some 80 miles southward of Vigo. On the south side of the Douro, is Villa Nova da Gaya, the original town, formerly called Callĕ; in it are the principal wine lodges and depôts: it formerly gave the name of *portus calle* to the port, from which it is said the present name of the kingdom of Portugal is derived. The well-known rocks, the Burlings, next attract the attention of the passenger, after which Cape Roca, the western point of Europe, will be passed with the Cintra mountains that rise just south of the cape, about 1,730 feet above the sea. On one summit is perched the now deserted "Cork Convent;" on another the romantic palace inhabited by the late Don Fernando, the intellectual consort of the late Queen. Cintra town, with its old Moorish palace, is clearly discernible with the telescope. In the midst of magnificent gardens, crowning a grassy knoll, and surrounded by thriving woods of gum trees brought from Australia, is the well-known villa "Monte Serrato," celebrated by Byron. All these slopes are planted with the vineyards that produce the famous Lisbon wines.

Nine miles north of Cintra, with a telescope may be seen the huge pile of buildings of Mafra Palace, reputed, next to the Vatican, to be the largest building in the world. Monastery, Royal Palace, Barracks, School, Library, University, Hospital, all find roomy accommodation within its ample precincts. Above this, stretching from the sea to the river Tagus, are the heights of Torres Vedras, celebrated in the peninsular war as the lines successfully defended by Wellington against the best efforts of an overwhelming French force.

A few miles further, and the mouth of the Tagus is passed, and a glimpse caught in the distance of the fine city of Lisbon. Steaming along at some distance from the land, presently are seen the curiously stratified cliffs of Cape Espichel, now surmounted by a fine lighthouse, to the eastward of which is the old Phœnician, Roman, Moorish, and Portuguese Port of Setubal, famed for its oranges. Cape St. Vincent is soon sighted ahead: a bluff 200 feet high having a convent, in which is the lighthouse, and other buildings on its summit. Nelson recurs to memory, capturing the *San Joseph* and the *San Nicholas* in Lord St. Vincent's signal victory in 1797, of which Mr. Hannay supplies the following account:—

"The battle of, or off, Cape St. Vincent came at a fortunate time for England. In 1797 the victories of the French armies had turned our allies of the continent against us and welded them into a naval coalition for our ruin. Worse than the loss of the half-hearted and inefficient allies were the Jacobin agitation at home and the famous mutinies at Spithead and the Nore. We had been compelled to evacuate the Mediterranean. There was a distinct feeling of depression in England. At that moment the victory of Sir John Jervis came to revive the national hopes and demonstrate the irresistible superiority of the Engish fleet over the enemies it had to deal with. The traveller who passes Cape St. Vincent goes by the scene of perhaps the most timely naval victory if not the most glorious we ever won.

At the beginning of February the two fleets which were to meet on 'the most glorious Valentine's Day' as Nelson called it, were widely separated. Sir John Jervis with ten sail of the line was escorting a convoy of Portuguese merchantmen (our allies) on their way to Brazil. His object was to see them safe out of the way of small privateers, and then to return to his cruising ground off Cape St. Vincent. On the 6th he was joined by a reinforcement of five sail of the line, and a frigate. With this force he proceeded to beat up against a heavy south easterly wind to his station. The wind which kept him back had swept the Spanish fleet through the Straits of Gibraltar. On the 1st February Don José de Córdova, the Spanish admiral, had left Carthagena with one 130 gun ship (the *Santisima Trinidad*), six 112 gun ships, two 80 gun ships, and eighteen 74 gun ships, a total of twenty-seven sail. He had a convoy of transports to cover as far as Algeciras, and his orders were to put into Cadiz, to take in stores and then if the English would let him, to sail for Brest there to join the French fleet. To them again were to come the Dutch, if the English would let them, and the three were to sweep the enemies of the human race (meaning the English) off the seas. It was a pretty scheme which happily was destined to be ruined on the 14th. Don José detached some of his ships to land the soldiers in the transports at Algeciras, and went on with the bulk of his fleet to Cadiz. Into that port, however, he did not go, for the easterly wind blew him out into the Atlantic, and when it shifted round to W.S.W. and S. of W., it brought Sir John Jervis with his fifteen ships right down the course Don José must needs sail along to reach Cadiz.

The two fleets had tidings of one another some days before they met. An American trader who had seen Jervis's squadron in the Tagus, passed through the Spanish Fleet, and gave Córdova the news that the English Admiral had only eight sail with him, which was true enough at the time. This report gave Don José a fatal confidence and made him all the more lax about keeping his ill manned and ill disciplined fleet in order. Sir John Jervis learnt that the Spaniards were at sea, from Commodore Horatio Nelson, who had just come back from an expedition to withdraw the English garrison from Elba. On his way he had fought with, and had taken a Spanish frigate, and had been chased by the line of battle ships through the Straits. The English Fleet held on its way in two divisions, and in close order, with a full knowledge of what was before it. During the night of the 13th February, a Portuguese frigate, the *Carlotta*, commanded by a Scotchman of the name of Campbell, brought Sir John Jervis news that the Spaniards were five leagues to windward of him. All night the English kept a sharp look out for the enemy without sighting him, though from time to time the wind brought down the sound of the guns Don José de Córdova fired as signals to his ships. Before dark on the 13th, the Spanish look-out frigates had sighted the English—and had mistaken them for a convoy. Don José and his fleet straggled on through the night before the south-westerly winds, anxious only to get back to Cadiz, and in utter ignorance of the approach of an enemy. So the enemies drew closer together in the darkness. On one side there was discipline and alert knowlege; on the other ignorance and supine confidence.

When day broke on the 14th February, 'the most glorious Valentine's Day,' this was the position of the fleets. The English were in two divisions and in close order, eight leagues to the west and a little to the south of Cape St. Vincent, standing to the south. The Spaniards were straggling across their path in two disorderly shoals—one, the smaller, consisting of six ships, one three-decker, and five two-deckers, was nearer to the land; the other, containing one four-decker, five three-deckers, and thirteen two-decked ships, was further out to sea. Two of the Spaniard's twenty-seven had been left at Algeciras. The two divisions were scattered along a line, stretching from S.W. to S. As the wind was at W. of S., the English were close hauled on the starboard tack, while the Spaniards were going

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large with the wind on the starboard quarter. There was a considerable interval between the two parts of Don José de Córdova's fleet, and both were in utter disorder, sailing two or even three abreast, with no pretence to be keeping a line. When day broke the weather was misty, and it was not until about eleven that the haze cleared away and the two fleets got sight of one another clearly. The odds looked heavy, twenty-five Spaniards to fifteen English; but Sir J. Jervis knew the value of his enemy. The Spanish Government had always mistaken numbers for strength, and had built more ships than it could man. Not a quarter of Don José's men were sailors. Many were not only landsmen, but had no drilling of any kind, having been pressed for the occasion. There was no confidence in the Spanish fleet, and little knowledge. On the other hand the English fleet was the pick of the navy. The ten ships of Sir J. Jervis's Mediterranean fleet were in a perfect state of discipline and efficiency. The five which had lately arrived from England, though, perhaps not up to the same level, were incomparably superior in drill and smartness to any squadron our continental enemies could have sent against them. There was perfect confidence in the English fleet—a confidence solidly founded on practice and experience. Sir John Jervis knew his own force, and his enemy. Without a moment's hesitation he hoisted the signal to form in line ahead in the most convenient order, and break through the gap between the Spanish divisions. With the utmost readiness the fifteen ships formed ahead and astern of the *Victory* in the following order:

Culloden	74 guns	Captain Thomas Troubridge.
Blenheim	98 ,,	Captain T. L. Frederick.
Prince George	98 ,,	Rear-Admiral W. Parker. Captain John Urwin.
Orion	74 ,,	Captain Sir James Saumarez.
Colossus	74 ,,	Captain George Murray.
Irresistible	74 ,,	Captain George Martin.
Victory	100 ,,	Admiral Sir John Jervis. Captain Robert Calder. Captain George Grey.
Egmont	74 ,,	Captain John Sutton.
Goliath	74 ,,	Captain Sir C. H. Knowles.
Barfleur	98 ,,	Vice-Admiral Hon. W. Waldegrave. Captain J. R. Davies.
Britannia	100 ,,	Vice-Admiral Charles Thompson. Captain Thomas Foley.
Namur	90 ,,	Captain J. H. Whitshed.
Captain	74 ,,	Commodore Horatio Nelson. Captain R. W. Miller.
Diadem	64 ,,	Captain G. H. Towry.
Excellent	74 ,,	Captain Cuthbert Collingwood.

Nelson had shifted his Commodore's broad pennant from the frigate *Minerva*, to the *Captain*, 74, on joining the fleet.

This line of fifteen ships, headed by a man well entitled to lead even a fleet containing Nelson and Collingwood, bore straight on the gap in the Spanish line. When it became clear that a battle was imminent, the Spaniards made a desperate attempt to bring their line into some sort of order. The smaller or lee division of them, which was nearer the land, came round from before the wind to the starboard-tack, and instead of heading eastward towards Cadiz, turned to south of west, towards the sea, with the intention of rejoining the bulk of their fleet. From east, west, and north the three squadrons, the two Spaniards and the one English, raced for the same spot. The Spaniards aimed at it because they wished to come together again, and the English because they wished to keep their enemy divided. It was the English who won, and at half-past eleven the *Culloden*, being then ahead of the leading ship of the Spanish weather or westerly half, opened fire with her starboard broadside. About this time two three-deckers and one two-decker of the larger or westerly Spanish swarm succeeded in stretching across the head of the English line, and joining the smaller division to leeward. Thus the English line found itself with sixteen enemies on one side and nine on the other. The real battle was between the sixteen Spanish ships to windward and the English fifteen. It was a fight of the sword fish and the whale. Jervis's ships thrust into the lumbering Spanish swarm in the most deadly style. As soon as the *Culloden* had passed the stern of the Spaniards to windward, she came round to the port tack and pressed in on the enemy, who was now to north and east of her. The following ships in the English line, the *Blenheim*, the *Prince George*, and the *Orion*, tacked as soon as they came into the wake of the *Culloden*. The fifth ship in the English line, the *Colossus*, had her fore yard and foretopsail yard shot away in the slings, and the foretopmast shot through above the cap. She was unable to tack, and had to wear out of the line to leeward towards the easterly division of the Spaniards. The *Orion* backed her mizen topsail and stood by to help, but seeing that the *Colossus* was in no danger from the flurried enemy, filled again and followed the *Culloden*. At this moment, therefore, the four leading English ships, the *Culloden*, *Blenheim*, *Prince George*, and *Orion*, were bent back on the port tack at an acute angle to the bulk of the line. The fifth ship, the *Colossus*, had fallen to leeward. The sixth, Jervis's flagship, the *Victory*, and the other nine were still standing to the south-west on the starboard tack, waiting till they were in the wake of the *Culloden* to tack in their turn. The larger Spanish swarm, to windward of our ships on the starboard and to leeward of our ships on the port tack, were in the angle. They were between two fires with

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their heads in chancery, so to speak, and were being terribly pummelled. Just then the easterly Spanish division, the smaller one, on the port side of the main English line made its only serious effort to take part in the battle. Headed by the *Principe de Asturias*, a big three-decker, this swarm tried to pass across the bows of the *Victory*, and rejoin their comrades to windward. The manœuvre was more gallantly designed than skilfully executed. The *Principe de Asturias* came right under the lee of the *Victory*, and received a raking broadside which sent her flying round in wild confusion. Then the rest of that division gave up the attempt to cut the English line and practically took no further part in the battle, with the exception of the *Oriente*, 74, which ran down the port side of the English ships, and, passing astern to the east of them, succeeded finally in rejoining the windward Spanish division.

Meanwhile, the bulk of the Spaniards who were in the angle and in chancery, made an effort to get out. They endeavoured to repeat the manœuvre of the *Oriente* in the opposite direction, to run down the starboard side of the English ships behind Jervis, to pass astern of the last of them, and rejoin their own vessels to leeward. This manœuvre, if successful, would have reduced the battle to a passing cannonade, and have put the Spaniards where the road to Cadiz was clear before them. Here was Nelson's chance, and he took it. A reference to to the order of battle given above will show that his ship, the *Captain*, 74, was the third from the English rear. As yet he had had no share in the battle which had been begun by the van. Now he struck in after a fashion which made the victory decisive. Seeing that the Spaniards must be stopped, he, without waiting for orders, and acting on the general spirit of Sir John Jervis's directions, wore his ship out of the line, went round the *Diadem*, the 64 astern of him, and ahead of the *Excellent*, hauled up on the port tack, and threw his vessel right across the path of the mighty *Santisima Trinidad*, and the Spanish three-deckers. This manœuvre, which was followed by the *Excellent*, the *Diadem*, and other ships on signal from the *Victory*, turned the English line into a pair of pincers, of which the points were the *Culloden* and the *Captain*. In this dreadful grip the Spaniards were caught tight. All attempt on their part to continue a regular battle was given up. They fled away seaward in disorder with the English sticking to them, and capturing the laggards. In the furious cannonading of this last struggle, the *Captain*, having been engaged with enemies who ought to have blown her out of the water if their guns had been properly handled, was crippled in the rigging. Collingwood in the *Excellent*, passed between her and the Spaniards, relieving her for a moment, and then pressed on in pursuit of the flying

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enemy. Nelson, with his fore-topmast gone, his rigging cut up, and his wheel shot away, could follow no further. So he did the next best thing, and fell alongside of the *San Nicolas*, 80, and carried her by boarding. The *San Nicolas* had already been driven on board the *San Josef*, 112, by Collingwood's fire. When the eighty-gun ship was mastered, Nelson prepared to push on to the towering deck of the hundred-and-twelve-gunner, but there was no more fighting here. The *San Josef* had had enough, and surrendered without more ado. Nelson climbed on to her quarter deck, and there received the swords of the Spanish officers, which his coxswain, William Fearney, tucked under his arm. The last of the fight was with the 130-gun ship, the *Santisima Trinidad*, the four-decker, which, as the coxswain told Peter Simple fought a deck better than any of the other Spaniards. She was tackled by the *Blenheim*, *Orion*, *Irresistible* and *Excellent* at once, and fought till her fore and mizen masts were gone, and she was utterly crippled. According to the belief of the officers of the *Orion*, she actually did surrender, but if so she may be said to have been re-taken, for several other Spaniards were seen coming to her assistance, fresh vessels which had not been engaged. Then Sir John Jervis hoisted the signal of recall, and ordered his fleet to form a line for the protection of the damaged vessels, and so the battle of St. Vincent ended. During the night the Spaniards got together again, and next day they made believe to renew the fight, but seeing the English ready for them they gave up the intention, if they ever really had it, and bore away for Cadiz. The English made their way with the prizes to Lagos. Our total loss in the battle was reported at 74 killed and 227 wounded; an astonishing proof of the inefficiency of the Spanish fire. Of that total, 25 killed and 56 wounded fell to the share of the *Captain* alone, pretty conclusive evidence of what part she had in winning the battle."

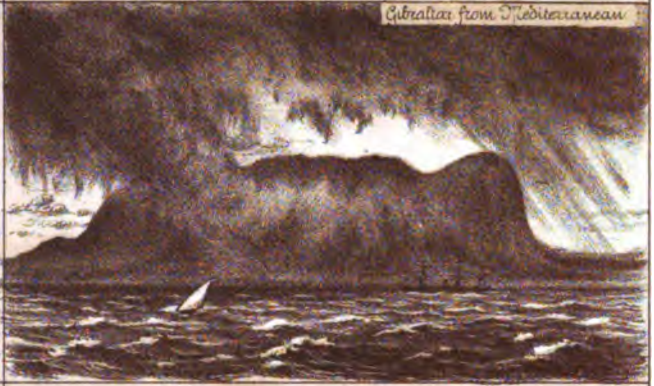
We are now off the southern point of the coast of Portugal, that small strip of Western Europe which at one time held in its dominion all the trade outlets down the west coast of Africa, along the East Coast and by Arabia, right round Hindostan to the Islands of the Eastern Straits. The Portuguese, all credit to them, were the pioneers, of that commercial colonization which the Dutch so developed and which the British nation appear to have perfected.

Cape St. Vincent passed, the cry is "Eastward Oh!" and the course is shaped for the Straits of Gibraltar. Cape Trafalgar, low and sandy with a dangerous shoal lying off it, is next passed with the stirring memory of the great sea-captain's last battle fought in 1805—in every way the greatest of naval battles. At Waterloo we fought for victory, but at Trafalgar the struggle was for existence. Mr. David Hannay supplies the following particulars of this great fight:—

Cape Trafalgar

Ape's Hill

Cape St. Vincent



Gibraltar from Mediterranean

Sierra Nevada.

Etna

"The greatest sea fight in the history of the world, the last which was fought with the old sailing fleet, took place, as all the world knows, off Cape Trafalgar on the 21st October, 1805. It would neither be appropriate nor even possible to give here as much as the most meagre outline of the long series of movements which brought the English and the combined fleets into contact on that great day. We must confine ourselves to the actual meeting. At day-break on the 21st then, the combined French and Spanish fleets were sailing in three lines for the Straits of Gibraltar when they sighted the English to westward and windward of them. As a battle was now inevitable, Admiral Villeneuve ordered his three lines to form in one formation for they can hardly be said to have formed a line. He also ordered them to wear to the north so as to head towards their harbour of refuge, Cadiz. They were then off Cape Trafalgar at a distance of about ten miles, with the English fleet about another ten miles off them to the north of west. Admiral Villeneuve's fleet consisted of 33 vessels in all, of which 15 were Spaniards and 18 were French. When after a good deal of difficulty they were at last formed in order they presented the appearance of a crescent lying almost due north and south with its convex side swelling out to the east. They were not in a single line abreast, but in a species of double line, and either by accident or design, the inner vessels were opposite the spaces between the outer so that the whole formation seemed to Admiral Collingwood to be a chequer. The space between the ships was about a cable's length (200 yards) so that the whole fleet covered a line nearly five miles long. French and Spaniards were mixed together in the following order begining with the most northerly, or van ship. We will put the Spaniards in italics to show the relative proportions more clearly. *Neptuno* 74, Scipion 74, Intrépide 74, *Rayo* 100, Formidable 80 (flagship of Rear-Admiral P. R. M. E. Dumanoir-le-Pelley), Duguay Trouin 74, Montblanc 74, *San Francisco de Asis* 74, *San Agostin* 74, Héros 74, *Santisima Trinidad* 130 (our old friend of Cape St. Vincent, flagship of Rear-Admiral Don Baltasar Hidalgo Cisneros) Bucentaure 80 (Villeneuve's ship, but she showed no flag), Neptune 80, *San Leandro* 64, Redoutable 74, *San Justo* 74, Indomptable 80, *Santa Ana* 112 (flagship of Vice-Admiral Don Ignacio Maria de Alava), Fonqueux 74, *Monarca* 74, Pluton 74, Algésiras (flagship of Rear-Admiral Charles Magon), *Bahama* 74, Aigle 74, Swiftsure 74 (an English prize), Argonaute 74, Montañez 74, *Argonauta* 80, Berwick 74, *San Juan Nepomuceno* 74, *San Ildefonso* 74, Achille 74, *Principe de Asturias* 112 (another friend from St. Vincent, and flagship of Don Frederico Gravina). These three-and-thirty men of war lay with their heads towards Cadiz with top-sails and top-gallant-sails set, their main top-sails shivering, and were a point or more off the wind.

The English fleet came down before the north-westerly breeze under press of canvas in two parallel lines of which the windward or northerly was led by Nelson in the *Victory*, and the lee or southerly by Collingwood in the *Royal Sovereign*. The two squadrons were composed of these ships:—

WEATHER DIVISION.

Victory	100 guns	Vice-Admiral Lord Nelson. Captain Thomas Masterman Hardy.
Téméraire	98 ,,	Captain Eliab Harvey.
Neptune	98 ,,	Captain Thomas F. Freemantle.
Leviathan	74 ,,	Captain Henry Wm. Bayntun.
Conqueror	74 ,,	Captain Israel Pellew.
Britannia	100 ,,	Rear-Admiral Earl of Northesk. Captain Charles Bullen.
Agamemnon	64 ,,	Captain Sir Edward Berry.
Africa	64 ,,	Captain Henry Digby.
Ajax	74 ,,	Lieutenant John Pinfold.
Orion	74 ,,	Captain Ed. Codrington.
Minotaur	74 ,,	Captain Charles J. M, Mansfield.
Spartiate	74 ,,	Captain Sir Francis Laforey.

Twelve vessels in all.

LEE DIVISION.

Royal Sovereign	100 guns	Vice-Admiral C. Collingwood. Captain E. Rotherham.
Belleisle	74 ,,	Captain William Hargood.
Mars	74 ,,	Captain George Duff.
Tonnant	80 ,,	Captain Charles Tyler.
Bellerophon	74 ,,	Captain John Cooke.
Achille (a French prize)	74 ,,	Captain Richard King.
Dreadnought	98 ,,	Captain John Conn.
Polyphemus	64 ,,	Captain Robert Redmill.
Revenge	74 ,,	Captain Robert Moorsum.
Swiftsure	74 ,,	Captain George Rutherford.
Defiance	74 ,,	Captain Philip C. C. H. Durham.
Thunderer	74 ,,	Lieutenant John Stockham.
Defence	74 ,,	Captain George Hope.
Prince	98 ,,	Captain Richard Grindall.

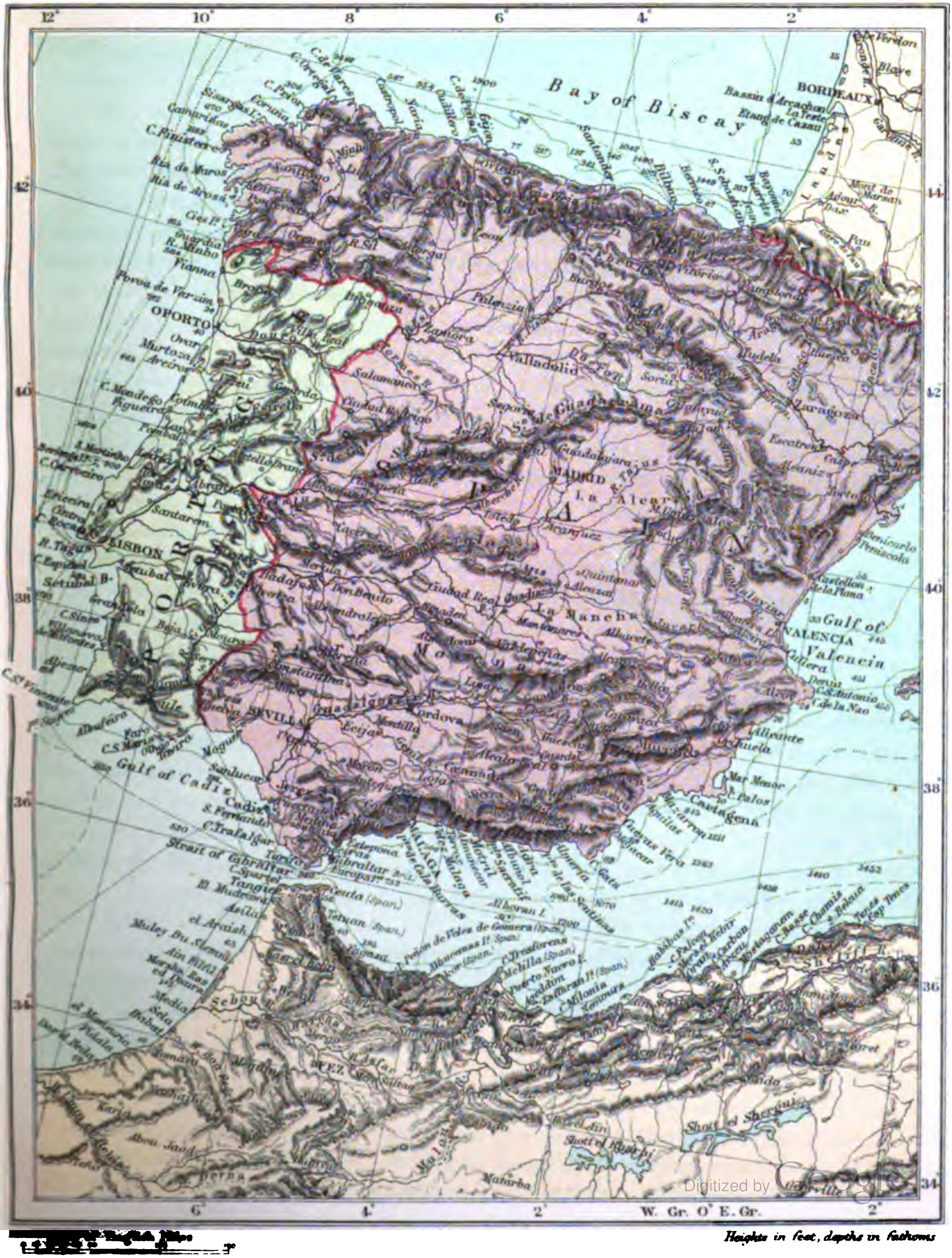
Fourteen ships in all, making with the weather division twenty-six sail of the line. The English fleet was also accompanied by four frigates, a schooner, and a cutter.

Nelson's plan of battle, which was in the main carried out, was that the lee division, headed by Collingwood, should break through the enemy's line at about the twelfth ship from the rear, while he himself broke through it a little in advance of the centre vessels. Then both divisions were to come to the wind on the lee side of the enemy. In this way a section of his line would be taken between two fires, and his rear, being to leeward, would be unable to succour the van before it was crushed. It was an adaptation, in fact, of the plan of battle of the Nile—an application of the "Nelson touch." We say the plan was carried out in the main, because, as a matter of fact, the whole of the two English lines never came into action at all, and so the enemy was not crushed by having the bulk of our force thrown upon him. The wind was very light all through the battle, and at times fell to a dead calm. As the English came down perpendicularly, or very nearly so, to the crescent of the French and Spaniards, the vans of their lines came into action much before the rear. It was upon them that the brunt of the battle fell, and indeed the rear ships of the English lines were not able to come up till the fighting was practically over. The *Prince*, 98, which was the rear ship of Collingwood's line, did not lose a single man killed or wounded. Of the total loss of 1690 men suffered by the whole fleet, very much the greater part fell upon fourteen out of the twenty-six vessels. Still these were enough to do the work. Collingwood cut the enemy's line astern of the *Santa Ana*, very shortly after midday. Ten minutes or a quarter of an hour afterwards, Nelson cut it astern of the *Bucentaure*. They and the ships immediately following them proved sufficient to ruin the enemy's centre, and shatter the rear. His van took no part in the battle, but remained still at the head of the line, till Rear-Admiral Dumanoir le Pelley thought it was time to be off. The actual fighting was over by five o'clock, or very shortly after it.

It would require far more space than we can afford here to give the details of this mighty crashing together of some sixty war ships—and indeed they are sufficiently uncertain and perplexing to require no small amount of discussion. James, by no means a wordy writer, devotes eighty-five pages to the battle first and last. But there are some of its incidents which everyone must mention who speaks of it, though they are probably better known than any others in English History. Who has not heard how Nelson when the last order was given, and the fleet was slowly bearing down on the enemy, entered his cabin, and penned his last prayer? Who has not heard of the strange legacy he left his country, of that appeal for Emma Hamilton, which he made in the innocence of his heart, so pathetically, and not the less pathetically because a little absurdly. The rest of the story is wholly noble. There is not much more touching in the history of war than the last parting with Captain Blackwood of the *Euryalus* frigate. Nelson went into the battle with a distinct conviction that he would not survive, and he said good-bye for ever to his old friend, as the Captain of the *Euryalus* went over the side to return to his frigate. 'God bless you, Blackwood, I shall never speak to you again,' these were the words of a man who felt he was going to his death, and to whom perhaps death was not unwelcome. Every school boy knows, or ought to know, the famous sayings of the two chiefs. 'What would Nelson give to be here,' said Collingwood, to his Flag-Captain Rotheram, as the *Royal Sovereign* passed astern of the *Santa Ana*, pouring in a broadside, which swept down four hundred of the Spaniards' crew, and dismounted twenty of his guns. 'See how nobly Collingwood leads his line into action' were Nelson's words to Hardy, as they, still at some distance from the French line, stood looking at the *Royal Sovereign* leading the lee division into battle. The Elizabethans could have imagined nothing finer. The death of the Admiral is in everybody's memory. Most, probably, of those who read this page have seen the very spot on which he fell, shot from the tops of the *Redoutable*, while walking to and fro in the thick cloud of smoke, and dust from the shattered timbers of the *Bucentaure*, which covered the quarter deck of the *Victory*. They have seen too the cockpit to which he was carried mortally wounded, and in which he died murmuring, 'I have done my duty: I thank God for it.' It was the most noble, and desirable of deaths. No chief ever died in such a fulness of glory and perfection of triumph. His work was done. Had he lived longer, it must have been in idleness, and most probably in blindness, with one beside him who would have stained his life with an ignoble touch. It was a thousand times better to die in the *Victory's* cockpit.

The battle of Trafalgar must for ever stand by itself. It was the last great battle fought under sail—the finish and heroic winding up of centuries of valour, effort and discipline. Steamships may do great things in future—we believe ours will—but they can never do the same thing. The great principles of Nelson's tactics remain sound for ever, but they must be applied with other instruments. Such an instrument as the fleet which won Trafalgar will not easily be found. It took sixty years of wars, counting from 1740, after which there was little peace till 1815, and the labours of a long succession of able leaders to make that fleet. Then it found a chief with the fire of genius who could do the utmost with it. The waters on which it fought its last and crowning fight should be holy to Englishmen. There is not one of them who has not good cause to be grateful to this day for Trafalgar."

SPAIN.



Heights in feet, depths in fathoms

The mind's eye will follow the few vessels of the enemy that escaped in their flight northwards into Cadiz harbour. And the imagination leads us to remember that there too are the vineyards of Xeres and the picturesque city of Seville.

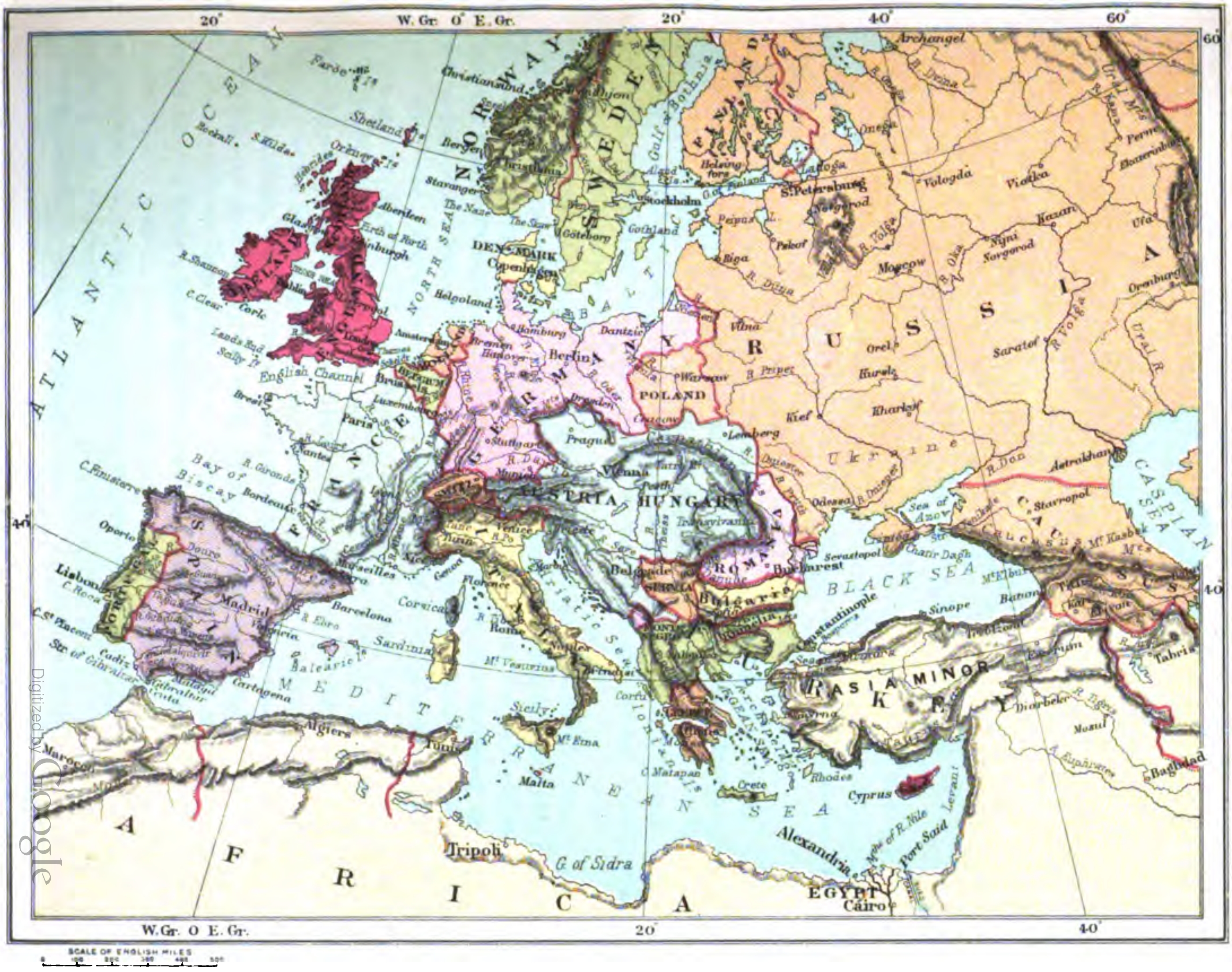
Tarifa, formerly an island, but now connected to the main land by an artificial causeway, is next seen: level, moderately high, and surrounded by steep cliffs. The town and arsenal of Tarifa, the ancient *Julia Joza*, stands inshore of the Peninsula; it was built by the Moors and is surrounded by a wall flanked with several towers, the principal of which is named the castle of Guzman. Tarifa passed, the great bay of Gibraltar or Algeciras will shortly open. On the west side of the bay stands the Spanish town of Algeciras (Al Gezireh means in Arabic an island—there is a small island in front of the town), while before the steamer is the famous "Rock," the Calpe of the ancients, which the Arabs called after their leader, Al Tair or Al Tarik ibn Zeyad, the lieutenant of Musa, the general who over-ran all northern Africa for the Caliph. The opposite cape is named Gebel Musa, in like manner, but the English sailor calls it Ape's Hill.

Gibraltar itself is more fully described in the next chapter. It has been, since 1704, in the possession of Great Britain. To the north, the sandy isthmus that separates it from Spain is dominated by a sheer precipice 1,330 feet high. In this are the celebrated galleries hewn within the rock, opening here and there in port holes which, with batteries in commanding positions about the rock, render it impregnable, The only landing is on the west side; but the garrison has hitherto successfully beaten off all attacks, including the persistent efforts of the French and Spaniards, who maintained a three years' siege in 1779-82. The signal station is 1,294 feet above the sea, and the highest point 1408 feet. The Barbary Ape is to be found on these summits; the only place in Europe where the wild monkey exists. In Gibraltar will probably be seen a greater variety of nationalities than in any other town in the world. The cantonments for the British troops are on the sandy isthmus to the north of the town. At Windmill Hill in 1867, some remarkable and extensive caves were opened, which have yielded a rich harvest of remains of extinct animals and also of "prehistoric man." In some of these the stalactites are superb.

The Straits of Gibraltar are between Calpe (Gibraltar) and Abyla (Apes' Hill), these being the ancient "Pillars of Hercules." The narrowest part of the straits is under eight miles across, six miles less than the mouth of the Red Sea, and there is always a strong current, or rather two currents, running. On the surface and to a depth of 200 fathoms there is an inflow from the Atlantic often running at a rate of four or five knots an hour; and creating at times much surface commotion. The velocity of this current is, however, checked by the influence of the local tide. Below

200 fathoms the waters are unaffected by the in-running current of the Atlantic, and set east or west for equal periods according to the tide. The deepest part of the Straits is over 500 fathoms, but currents are much complicated by a remarkable submarine rocky ridge or barrier that runs from Cape Spartel in Africa towards Cape Trafalgar in Spain, over which the greatest depth is only 190 fathoms.

EUROPE.


W. Gr. 0° E. Gr.
20°
40°
60°
ATLANTIC OCEAN
NORTH SEA
BALTIC
MEDITERRANEAN SEA
BLACK SEA
CASPIAN SEA
NORWAY
SWEDEN
FINLAND
RUSSIA
POLAND
DENMARK
GERMANY
FRANCE
SPAIN
PORTUGAL
ITALY
AUSTRIA HUNGARY
ROMANIA
SERVIA
BULGARIA
TURKEY
ASIA MINOR
CAUCASUS
EGYPT
AFRICA
Ukraine
Archangel
St. Petersburg
Moscow
Stockholm
Christiania
Copenhagen
Berlin
Warsaw
Vienna
Paris
London
Madrid
Lisbon
Rome
Constantinople
Cairo
Alexandria
Tripoli
Tunis
Algiers
Cyprus
Crete
Malta
Sicily
Sardinia
Corsica
Balearic Is.
G. of Sidra
Bay of Biscay
English Channel
Gulf of Bothnia
Sea of Azov
Ural Mts.
SCALE OF ENGLISH MILES
0 100 200 300 400 500

CHAPTER V.

FROM GIBRALTAR TO NAPLES.

Gibraltar as seen from the Sea.—The Town.—Its History.—The Great Siege.—The Apes.—Excursions from Gibraltar.—Tangier.—Malaga.—Grenada.—The Alhambra.—Cape de Gata.—Algiers.—Sardinia.—The Bay of Naples.

THERE is something very attractive in the view of Gibraltar from the sea. The combination of high antiquity and the latest improvements in military engineering, of Mediterranean warmth with English neatness, of the sternness of warlike preparations and the gentleness of the mild breeze, the blue sky, the still bluer sea, and an exquisite landscape, with fold after fold of giant mountains fading away insensibly in the distance, is most fascinating.

As we steam up to an anchorage we can identify the chief sites of interest. At the southern extremity, which it should be mentioned, is not the most southern point of Spain, an honour which belongs to Tarifa, on a low spit of land is the lighthouse marking Europa Point. Then rising higher up the hill are endless rows of barracks interspersed with a few private houses, until the eye reaches the little tract of woodland which stands above this end of the town. All the buildings here are collectively know as " The South." Among the trees nestle a few villas, from which there is a lovely view. Above all rises the bare rock, to a height of 1361 feet, crowned by a lightning-struck tower, known as O'Hara's Folly. Down by the water side great guns may be descried by keen eyes, and the harbour for men-of-war opens a little further on, at the New Mole. Then we come to the green Alameda, part of which is the cemetery of the soldiers killed in the great siege. In front projecting slightly into the water is "Jumper's Bastion," and north of it the Parade Ground. We now come to the town, one of the first houses being the so-called " Convent " where the governor resides. In the mass of irregular houses it is not very easy to distinguish it. Climbing the mountain side in a long *zig-zag* is the old Moorish wall defending what was then the southern limit of Gibraltar.

The old town is not very picturesque, but we get a good view of the Moorish Castle on a height above the northern extremity, and may try to judge for ourselves whether or no those obtusely pointed arches are the oldest in Europe, as is said. A castle was certainly built here by Abu-al-Hajez in 725. Far beyond the Castle we see the low isthmus which unites Gibraltar with Spain, and at the further side the Spanish lines, where there are a few houses. The mountains rise in tiers until in the far distance rather to the eastward the snowy ridge of the Sierra Nevada may be made out.

The anchorage at Gibraltar is not good in a southerly breeze, and the ship heaves-to a long way from shore. It is, however, well worth while to land and stroll through the market, which is close to the landing place, and the narrow winding streets of the old town. It takes longer to ascend to the famous galleries; but, if any stay is made at Gibraltar they should by no means be omitted. A drive along the road to the south is also very interesting, and the view across the Straits to " Ape's Hill " framed between the stone pines at the summit of the slope is well worth a little trouble. A longer time is required for a visit to the signal station, 1,294 feet above the sea, but it is worth the trouble.

Gibraltar was taken from the Moors by the Spaniards in 1462, after a long siege. In 1704 Sir George Rooke appeared in Gibraltar Bay with a fleet and summoned the governor, who had only 150 men under him, to surrender. On his refusal some troops were landed on the isthmus, but on the 23rd July, two days later, Captain Hicks and Captain Jumper landed on the New Mole, and after some fighting made good their hold by taking a redoubt, after which the Spanish Governor capitulated. In July, 1713, Gibraltar was formally ceded; but, the English had already sustained a desperate attack by both Spanish and French troops and ships. The great siege of Gibraltar, however, was begun in July, 1779, and went on for four years, with more or less intermission, General Elliott being the governor. The incidents of the siege are described in Drinkwater's well-known book; and we need only point out here that the great attack of the 13th September, 1782, was directed to the King's Bastion, where Elliott himself stood during the hottest of the fire. The galleries from which he was able to play with such effect on the Spanish lines are situated along the northern face of the rock; but there are many other excavations, some of them only known to a select few. In fact, the whole hill is honey-combed with hidden batteries.

The Rock of Gibraltar is the only place in Europe where the ape is to be found wild. A small flock, now carefully preserved, lives in the upper fastnesses of the rock, and is occasionally seen in the gardens on the lower slopes. They were at one time, it is said, reduced to a dozen or so, but have lately increased in numbers, and there are now about thirty. They are of the same species as that on the coast of Barbary opposite, known to naturalists under the name of *Inuus ecaudatus.*

A week at Gibraltar may be agreeably varied by excursions beyond the Spanish lines to San Roque, whither, after the British occupation, the inhabitants fled, or to the famous Cork Wood, or to Carteia, the ruins of a Roman station; or across the bay to Algeciras. But the best of all the Gibraltar excursions is to Tangier. A small steamer runs four times a week and there are other opportunities.

Tangier belongs to Morocco, but was at one time a British possession, having been ceded to Charles II. as the dowry of his Queen, Katharine of Braganza, by the Portuguese. The place was abandoned in 1683. There are views of Tangier by Winceslaus Hollar, the great engraver, and it may interest some to know that good Bishop Ken was chaplain to the garrison. Sir Lambert Playfair says of Tangier in his Handbook of the Mediterranean that a stranger who has not been in the East will find the first view of it very striking. "Although Europe has been left behind but a few short hours, he finds himself transported into a city as oriental as a page of the *Thousand and One Nights*. A convenient pier of recent construction enables him to land in comfort, but one is almost tempted to regret the picturesque but very disagreeable method, formerly in force, of being carried ashore on the backs of brawny but unclean Jews."

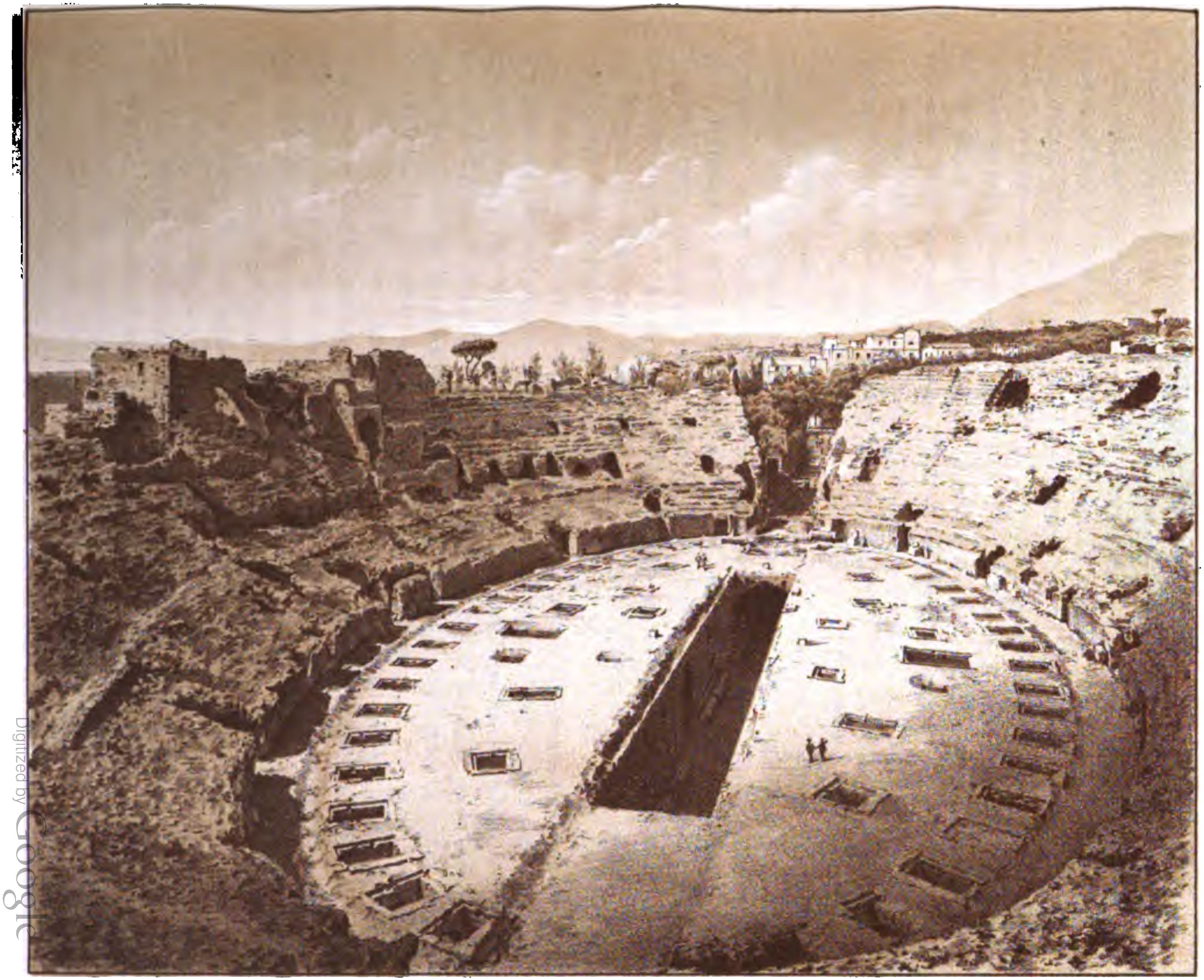
There are several hotels, Tangier having, in fact, the repute of being better off in this respect than Gibraltar. It stands on the western side of a fine bay, surrounded by magnificent mountains. Some picturesque ruins of the Roman period are near the town, but the people of the place constitute its chief attraction. "The *Soko*, outside of the town, is worth a visit, and on market days (Sunday and Thursday) presents a curious picture, being filled with men, women and children from the neighbouring villages, coming to purchase or sell provisions. It is difficult to wend one's way through the crowds of people, mules, horses, camels and asses. Here, in the afternoons, may be frequently seen the itinerant story tellers and snake charmers, with circles of admiring natives gathered round them, listening with unflagging interest the oft told tale, or watching the familiar performance of the snake charmer. Rough and wild looking as the Moors appear, they are generally civil and well behaved towards the foreigner." The population of Tangier is estimated at 20,000.

Another delightful excursion from Gibraltar is that to Malaga and Grenada. Malaga is about 70 miles north-east of Gibraltar, and there is frequent communication by steamer between the two places. There is an old Moorish castle in ruins on the Gibralfaro (mount of the lighthouse), and the cathedral, which is not a very beautiful building, is on the site of a mosque. There is, however, very little to delay the sight-seer in Malaga; and few people who find themselves so near Grenada are willing to delay on the road. "The railway, on leaving Malaga, passes through one of the richest and most picturesque countries it is possible to imagine," says Sir Lambert Playfair. "Only at Valencia are finer orange groves to be seen, and if it happen to be spring, when the ground is carpeted with green, and the air is heavy with the odour of orange blossom, the reminiscence of the journey will be engraved for ever on the memory."

Grenada is situated beneath the great Sierra Nevada, which rises to a height of 11,703 feet, the old city itself being on the average upwards of 2,000 feet above the level of the sea. The Alhambra towers above the town on a broad plateau. This famous palace and fortress was begun in 1248 by Ibn el Ahmar. As *Ahmar* means red, and as *hamra* is the feminine of that adjective, there may be something more than an accidental connection between the names, but the full Arabic term *Kelaat el Hamra*, the Red Castle, may refer to the colour of some of the principal towers. The *Patio de los Leones*, one of the courts of the palace, is well known everywhere, and the English tourist has seen a very good imitation of its beauties in the Crystal Palace at Sydenham. What he cannot see at Sydenham are the glorious mountains, the blue skies, the strange blank old walls, the contrast between what is dusty and faded and what is gorgeous with gold and colour and inlay. The courts and chambers shown to the public comprise the *Patio de los Arrayanes*, or *Patio de la Alberca*, so called from the myrtle hedges, or the tank in the centre, (*birket*, in Arabic, is a pond); the Hall of the Ambassadors, forty feet square, once a mass of gorgeous decoration, but now much faded; the mosque, turned into a church by Ferdinand and Isabella, and the Halls of the Abencerrages and of the Two Sisters. No traveller should leave the Alhambra without a visit to the Torre de la Vela, or watch tower, at the western corner, whence a magnificent view may be obtained over Grenada and the surrounding country. There are many things to be seen in Grenada besides the Alhambra, and people interested in architecture may remember Fergusson's account of the Palace of Charles V. The Generalife, a private house, with wonderful gardens and a fine view; the Cathedral, with its royal tombs, and the old city streets, full of Moorish and Spanish antiquities, the experienced visitor will find out for himself.

When the steamer leaves Gibraltar for Naples she passes too far, as a rule, from the shore for Malaga to be sighted, but the Sierra Nevada is in view, and the fine coast line, full of colour.

Another 100 miles of steaming brings the ship to Cape de Gata, a rugged headland descending in declivities from the Sierra of the same name. This Cape has an evil reputation among sailors: strong currents are experienced in the water,



THE AMPHITHEATRE, POZZUOLI.

with sudden meetings of opposite winds in the air. These conflicts of winds, called *contrastes*, naturally raise a heavy sea, and at the equinoxes are often accompanied by thunder storms, violent squalls, and an occasional waterspout. Just west of Cape de Gata is the Spanish town of Almeria, the centre of one of the richest as well as most picturesque provinces of Spain. On the left, in the midst of the sea, is the small Spanish isle of Alboran, a resort of fishermen and smugglers, and even, it is rumoured, seafarers of a more lawless description.

From Cape de Gata, the Spanish coast trending away to the north-west, the steamer leaves the land, steering for the south end of Sardinia, a distance of about 530 miles. If the steamer's course lay near to the African coast, the fine bay of Algiers, with the ancient city and modern villas and suburbs, might be sighted; and the change noticed that has come over this place, which, from its foundation in the tenth century till its bombardment by the British fleet under Lord Exmouth, in 1816, had been a formidable pirates' nest. Until that year the Algerines were the terror of the seas, and specially dreaded on account of their habit of retaining in slavery all whom they captured in war. The French seized the district in 1830, and now the town and its neighbourhood have become a sanatorium for modern Europe.

The south coast of Sardinia is high and rugged: Cape Teulada, the ancient *Chersonesus*, the most southern point, is a singularly formed headland, its cliffs rising precipitously 750 feet out of the sea. Westward of this cape lies Cape Spartivento, the ancient *Herculis Prom*, having passed which the Bay of Cagliari opens with the town, the *Caralis* of the Phœnicians, situated at its head. The town is walled, and the summit, elevated about 400 feet, is crowned by the citadel.

The Bay of Naples, distant 240 miles, is now steered for. If the land be made at night, one of the first objects seen will probably be the intermittent flame from Vesuvius, a good mark to steer for either by night or by day. Daylight will show the beautiful island of Ischia, the coast of which is rocky and precipitous. Ischia passed, Baiæ, the Brighton of old Rome, next opens, with its castle and ruined temples. Pozzuoli lies some two miles eastward of Baia from which runs a mole constructed on the bridge of Caligula; the land at the back is volcanic, on which are the great craters of Monte Nuovo and Astroni. The steep rocky islet of Nisida and Cape Caraglia are next rounded, and the steamship enters the beautiful bay of Naples, well deserving of all the praise that has been lavished upon it. The Bay of Naples must be seen! Close off Cape Caraglia is Gajola rock on which, and along the shore, both above and under water, are enormous ruins of every description. The coast is now studded with villas and dotted with gardens; the ruins of the castle of Queen Joanna and the grim prison of Ovo Castle stand out conspicuously: the hill of Chiaja is fronted by terraced gardens and long handsome quays. The city of Naples rises from the shore in form of an amphitheatre divided into two unequal crescents by the hill of San Martino, and crowning a height in the centre of the city is the castle of St. Elmo. On the north rises the hill of Capodimonte on which stand the observatory and a royal palace. Large moles protect the military and grand ports; from the latter the land sweeps round to the eastward, turning south at the foot of Vesuvius, near Port Torre del Annunziata. On this coast lie the small towns of Portici, Resina, and Torre del Greco. The first named is built on the site of the buried Herculaneum. From Port Torre del Annunziata the coast runs first south to Castellamare and then sweeps round westward to Sorrento and Campanella Point, three miles again to the westward of which lies the fertile and famous island of Capri, with its terraced bluffs. Capri completes the marvellous curve of beauty that bounds the Bay of Naples. Over Castellamare rises the mountain of St. Angelo, in the valley between which and Vesuvius, but nearer the volcano, are the ruins of Pompeii.

The Bay of Naples has been so often and so eloquently described that a visitor is very likely to be disappointed with it. When the slopes of Vesuvius are covered with snow and the streets of the city darkened with fog, or when there is a downpour of rain, with a heavy cloud hiding the mountains altogether, the unhappy traveller is naturally disenchanted. Such things do sometimes happen, and it is better, therefore, not to expect too much, and also to remember that the great size of the Bay of Naples renders it unlikely that all its beauties should be visible at one and the same time. Of course, lovely clear days do occur, and sometimes many of them in rapid succession: but we cannot always count upon good weather, and must be content with what we have.

By far the best account that I have met with of the Bay, its associations and its scenery, is to be found where we should least expect it, in a novel by Fenimore Cooper, the "Waterwitch." Here is the whole passage:—

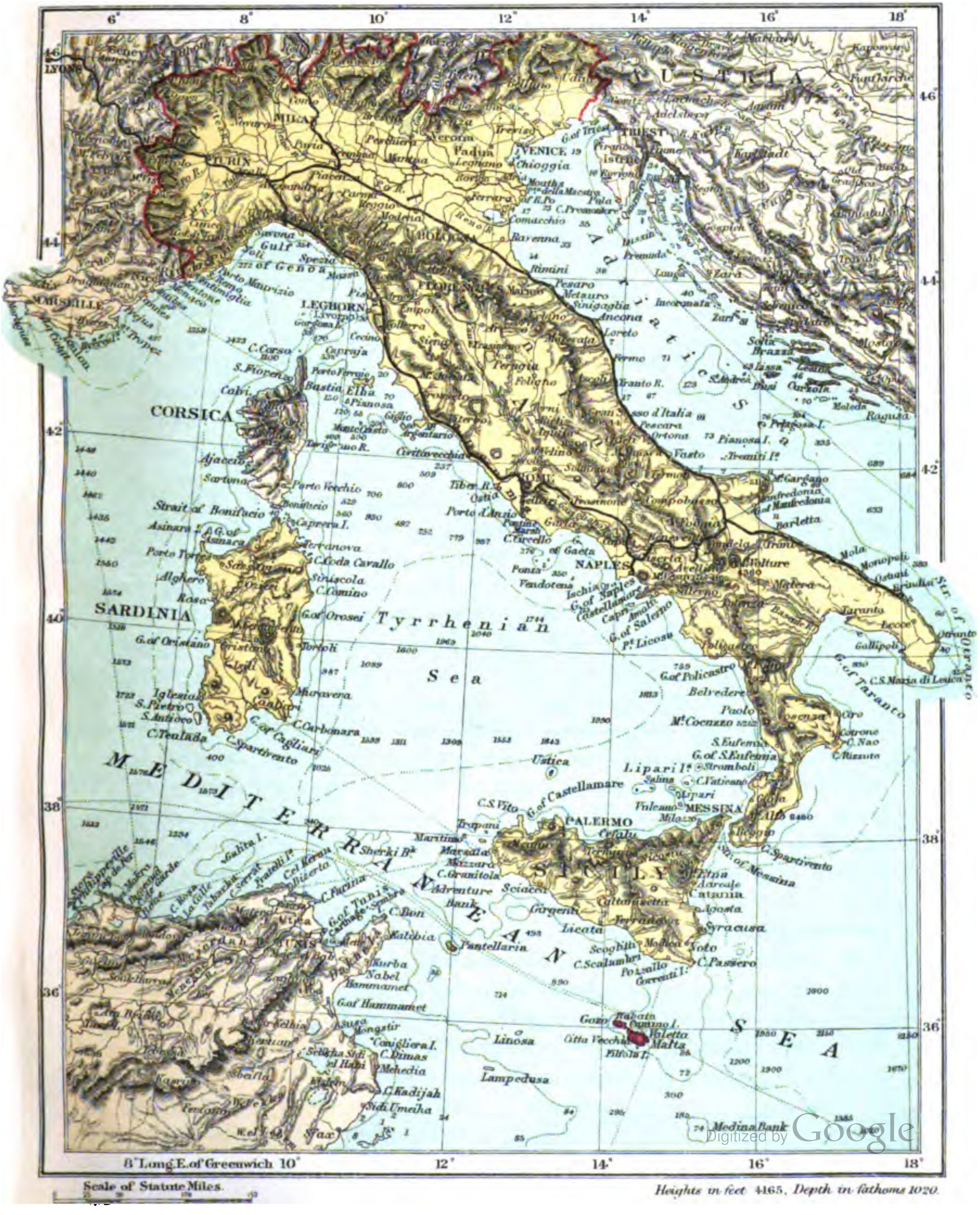
"Though many years are gone," he said, "I can recall the beauties of that scene as vividly as if they stood before the eye. Our abode was on the verge of the cliffs. In front lay the deep blue water, and on its further shore was a line of objects such as accident or design rarely assembles in one view. Fancy thyself, lady, at my side, and follow the curvature of the northern shore, as I trace the outline of that glorious scene. That high, mountainous, and ragged island on the extreme left is modern Ischia. Its origin is unknown, though piles of lava lie along its coast, which seems fresh as that thrown from the mountain yesterday. The long, low, bit of land, insulated like its neighbour, is called Procida, a scion of ancient Greece. Its people

ITALY

NAPLES.

still preserve in dress and speech, marks of their origin. The narrow strait conducts you to a high and naked bluff. That is the Misenum of old. Here Æneas came to land, and Rome held her fleets, and thence Pliny took the water, to get a nearer view of the labours of the volcano after its awakening from centuries of sleep. In the hollow of the ridge, between that naked bluff and the next swell of the mountain, lie the fabulous Styx, the Elysian Fields, and the place of the dead, as fixed by the Mantuan. More on the height and nearer to the sea, lie buried in the earth the vast vaults of the Piscina Mirabile and the gloomy caverns of the Hundred Chambers—places that equally denote the luxury and the despotism of Rome. Nearer to the vast pile of castle that is visible so many leagues, is the graceful and winding Baiæan harbour; and against the side of its sheltering hills once lay the city of villas. To that sheltered hill emperors, consuls, poets, warriors crowded from the capital in quest of repose, and to breathe the pure air of a spot in which pestilence has since made its abode. The earth is still covered with the remains of their magnificence, and ruins of temples and baths are scattered freely among the olives and fig-trees of the peasant. A fainter bluff limits the north-eastern boundary of the bay; on it once stood the dwellings of Emperors. There Cæsar sought retirement; and the warm springs on its sides are yet called the baths of the bloody hero. That small conical hill which, as you see, possesses a greener and fresher look than the adjoining land, is a cone ejected by the cauldron beneath but two brief centuries since: it occupies, in part, the site of the ancient Lucrine Lake. All that remains of that famous receptacle of the epicure is the small and shallow sheet at its base, which is separated from the sea by a mere thread of sand. More in the rear, and surrounded by dreary hills, lie the waters of Avernus; on their banks still stand the ruins of a temple, in which rites were celebrated to the infernal deities. The grotto of the Sybil pierces that ridge on the left, and the Cumœan passage is nearly in its rear. The town which is seen a mile to the right is Pozzuoli, a port of the ancients, and a spot now visited for its temples of Jupiter and Neptune, its mouldering ampitheatre, and its half buried tombs. Here Caligula attempted his ambitious bridge, and while crossing thence to Baiæ, the vile Nero had the life of his own mother assailed. It was there, too, that holy Paul came to land when journeying a prisoner to Rome. The small but high island nearly in its front is Nisida, the place to which Marcus Brutus retired after the deed at the foot of Pompey's statue, where he possessed a villa, and whence he and Cassius sailed to meet the shade and vengeance of the murdered Cæsar at Philippi. Then comes a crowd of sites more known in the middle ages; though just below that mountain, in the background, is the famous subterranean road of which Strabo and Seneca are said to speak, and through which the peasant still daily drives his ass to the markets of the modern city. At its entrance is the reputed tomb of Virgil; and then commences an ampitheatre of white terraced dwellings. This is noisy Tripoli itself, crowned with its rocky castle of St. Elmo. The vast plain to the right is that which held the enervating Capua and so many other cities on its bosom. To this succeeds the insulated mountain of the volcano, with its summit torn in triple tops. 'Tis said that villas and villages, towns and cities, lie buried beneath the vineyards and palaces which crowded its base. The ancient and unhappy city of Pompeii stood on that luckless plain, which, following the shores of the bay, comes next; and then we take up the line of the mountain promontory which forms the Sorrentine side of the water."

ITALY.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Piacenza
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Reggio
Modena
Bologna
Brescia
Verona
Padua
Legnano
Peschiera
Mantua
Treviso
VENICE
Chioggia
Ferrara
Rovigo
Mouths of R. Po
Comacchio
Ravenna
Rimini
Pesaro
Metauro
Sinigaglia
Ancona
Loreto
Macerata
Fermo
Tronto R.
Pescara
Ortona
Vasto
G. of Trieste
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Fiume
Istria
Pola
C. Promontore
Zara
Incoronata
Lissa
Brazza
S. Andrea
Busi
Curzola
Meleda
Ragusa
Pelagosa I.
Pianosa I.
Tremiti Is.
Adriatic Sea
Savona
Gulf of Genoa
Spezia
Massa
Pisa
Porto Maurizio
Ventimiglia
Nice
MARSEILLE
Toulon
Frejus
St. Tropez
LEGHORN
Livorno
Gorgona I.
Cecina
Capraja
Porto Ferrajo
Elba
Pianosa
Giglio
Monte Cristo
M. Argentario
Grosseto
Siena
FLORENCE
Empoli
Arezzo
Trasimeno
Perugia
Foligno
Terni
Rieti
Aquila
Gran Sasso d'Italia
Viterbo
Civitavecchia
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Porto d'Anzio
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C. Circello
Gaeta
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Ischia
NAPLES
G. of Naples
Capri
Castellamare
Amalfi
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Salerno
Avellino
Benevento
Campobasso
Foggia
M. Gargano
Manfredonia
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Barletta
Trani
M. Volture
Mola
Monopoli
Ostuni
Brindisi
Matera
Potenza
Taranto
Lecce
Gallipoli
Otranto
Str. of Otranto
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C. S. Maria di Leuca
Policastro
G. of Policastro
Belvedere
Paola
M. Cocuzzo
Cosenza
Coro
Cotrone
C. Nao
C. Rizzuto
S. Eufemia
G. of S. Eufemia
Stromboli
Lipari Is.
Salina
Lipari
C. Vaticano
Vulcano
MESSINA
Milazzo
Reggio
C. Spartivento
Str. of Messina
CORSICA
C. Corso
Bastia
S. Fiorenzo
Calvi
Ajaccio
Sartene
Porto Vecchio
Bonifacio
Strait of Bonifacio
Asinara I.
G. of Asinara
Caprera I.
Terranova
C. Coda Cavallo
Siniscola
C. Comino
Porto Torres
Sassari
Alghero
Bosa
SARDINIA
G. of Orosei
Tortoli
G. of Oristano
Oristano
Iglesias
S. Pietro
S. Antioco
C. Teulada
Cagliari
G. of Cagliari
C. Carbonara
C. Spartivento
Muravera
Tyrrhenian Sea
MEDITERRANEAN SEA
Ustica
C. S. Vito
G. of Castellamare
PALERMO
Cefalu
Trapani
Marsala
Mazzara
C. Granitola
Sciacca
Girgenti
Licata
Caltanisetta
Terranova
SICILY
Etna
Catania
Agosta
Syracusa
Noto
Modica
C. Scalambri
Pozzallo
C. Passero
Correnti I.
Adventure Bank
Sherki Bk.
Pantellaria
Galita I.
C. Rosa
La Calle
Biserta
C. Farina
G. of Tunis
Carthage
TUNIS
C. Bon
Kalibia
Hammamet
G. of Hammamet
Monastir
Mehedia
C. Dimas
C. Kadijah
Sfax
Linosa
Lampedusa
Gozo
Malta
Valetta
Citta Vecchia
Filfola I.
Medina Bank
8° Long. E. of Greenwich 10°
Scale of Statute Miles
Heights in feet 4165, Depth in fathoms 1020.

CHAPTER VI.

NAPLES.

NOTES ON ITALIAN HISTORY. — THE REVIVAL OF LEARNING. — SAVONAROLA. — GIORDANO BRUNO. — GALILEO. — TIME OF YEAR FOR A VISIT. — GUIDE BOOKS.—NAPLES.—THE MUSEUM.—THE BRONZES.—THE MARBLES.—THE PICTURES.—POMPEII.—DOMESTIC LIFE OF THE ROMANS.—PÆSTUM.

A FEW days in Naples, whether we are going home or propose to finish the voyage to Australia, are full of interest and attraction to the traveller. The following notes on a visit to Italy are by Mrs. Henry Fawcett, and will enable the reader to judge what may be seen and done in the time at disposal.

In its first and most obvious sense the phrase, "the New World" is an expression which indicates the continents that have been discovered and inhabited by Europeans since the eventful year of the discovery of America by Columbus. In this sense the New World comprises the continents of America, and the more recently settled continent of Australia. But to a home-staying Englishman, and still more, I imagine, to a home-staying American, or to an Australian Colonist, the first visit to the early home of European civilisation, art, commerce, and learning, is personally the discovery of a "New World." Such a new world is within the reach of any one who can compass a journey to Italy or Greece with heart, eyes, and mind open to feel, see, and understand some portion of what those marvellous countries can show us, their place in history in relation to ourselves, their unrivalled achievements in art, their commercial greatness, the daring of their inhabitants as mariners and discoverers, and last but not least, to the fact that to them we owe the revival of learning which was the great work of the Renaissance, and has resulted in saving to the whole world all that it now possesses of ancient literature and philosophy. I will not pretend in these short pages to be able to speak of Greece, because to me Greece is still a land of promise, and I wish to speak very humbly of Italy, as one who knows only just enough to discern the vastness of his own ignorance.

I speak purposely of our being able to feel, see, and understand some fraction only of the marvels of what I have called the New World; for Italy affords the favourite pasture ground for specialists in a dozen different branches of knowledge. It is the chosen ground for the historian and lawyer; for Italy is the connecting link between the ancient and modern worlds. Italy, through Rome, has been the lawgiver of other nations. The long line of the Cæsars, beginning with Augustus, twenty-seven years before the birth of Christ, and ending with Francis II. of Austria, who resigned the title in 1806, sets vividly before us the continuity of history, and makes us realize, as perhaps we have never done before, that we are not disjointed atoms uninfluenced by the past; we are such as we are because of the labours and struggles, failures and triumphs, of countless generations which have gone before us. It is impossible, even for the most unlearned, not to feel something of this inheritance which the present has received from the past, when one stands on the sites of world-famous events which have changed the whole course of history.

The predominance of Italy in art needs no insisting upon; it is so obvious that the only danger is lest one should get to regard Italy less as the glorious mother-land of civilisation, commerce, art, and learning, than as a sort of huge museum to be catalogued and labelled and "done" by the weary tourist. The appreciation of the art of Italy will, to the average traveller, be intensified almost in direct proportion as he has got to know something of the people who have achieved such marvellous works. But the process of gradual enlightenment on the mazes of Italian History usually begins from the other end. The traveller, who for the first time sees Giotto's tower at Florence, and at a stone's throw distant on the one side the Baptistery with its marvellous storied gates, and on the other the matchless dome of Brunelleschi, feels that the fairy tale has come true and that he is in the land of the giants; he longs to learn to know something of the men who achieved such supremely beautiful works and of the history of the city which bred such citizens.

Almost every Italian city might be called a museum of painting, sculpture, and architecture, were it not that the art of a museum is dead, while the art of these cities is living. A bronze gate, for instance, torn from its surroundings, and from the uses to which its maker destined it, ticketed and labelled in a museum, is a very different object from the very same gate in its place, on the cathedral it was made for, thrown open to the throngs of people pressing in to catch a glimpse of a marriage or a funeral, and polished by the rubbing of countless shoulders passing in and out day by day, from year's end to year's end. Our first thought in the Baptistery at Florence is not that the font is made of this or that marble, or that the reliefs are in the style of this or that famous sculptor. It is endeared to us by its human associations, by seeing the babies being christened in it now, and by knowing that this has been the christening place of every Florentine baby, from Dante and Lorenzo to the poorest little mortal born yesterday. Italy has been the great storehouse of art for other countries; England, France, Spain, Germany and Russia, have enriched themselves with Italian painting, Italian sculpture, Italian carvings, Italian mosaics and gems. But however much they can take from her, she remains the only place where her treasures are at their fullest and best, because here one sees them at home, in the places their makers intended them for, put to the uses originally destined for them. One feels this much more strongly with regard to sculpture and architecture than with regard to paintings which are essentially movable objects and do not lose so much, though they do lose something, by being transferred from their original habitation. Flowers lose some, but not so very much, of their natural beauty, by being transferred from the garden to a bowl on the drawing-room table; but a forest tree transferred from the forest, if such a thing could be done, and fixed up artificially in the hall or conservatory of a palace, would lose nine-tenths of its beauty, even though leaf for leaf and twig for twig it remained the same tree. Those who wish to know forest trees at their best must go to the forest; and those who wish to know Italian sculpture and architecture as their best and highest must go to Italy; models and copies will not serve except as reminders to those who have been in the home of the originals. Originals themselves torn from their home will seldom be appreciated except by those who know what their home is. There is a most exquisitely beautiful Italian sculptured tomb in the South Kensington Museum. It represents the recumbent figure of a woman in the sleep of death. Nothing can rob it of its perfection; its dignity, sweetness and calm are immortal; but if it has all these graces deathlessly even in a museum, with excellent policemen tramping about, and with the clatter and smell of the refreshment-room close by, what would it not be in Padua, where Donatello made it, perhaps for the husband or the children of the woman it commemorates, surrounded by the fair city she lived in, with all the associations of human affection and relationship superadded to its beauty!

Antiquarian and archæological enthusiasm is nowhere so readily aroused as in Italy. The whole land teems with relics of the past. The soil of Italy is a mine of ancient art. The richest lodes have no doubt been long worked out; no more "dying Gauls," no more Ariadnes, or friezes of fighting Amazons will probably be discovered; but discoveries of minor importance are of almost daily occurrence, and the peasants, when they are digging or ploughing in such a neighbourhood as that of

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Tivoli, frequently turn up coins, fragments of Roman pavement, and other evidences of bygone days.

Music is another of the arts in which Italy took the lead of other modern countries. The great old Italian school of music which numbered Palestrina, Scarlatti, and Corelli among its ornaments, was the forerunner of the German school, headed by John Sebastian Bach. Bach, who has been called the founder and father of German music, and Handel (both born 1685) derived the chief part of their musical education from the study of the Italian masters.

Perhaps the early achievements of Italy in commerce are less remembered now than they ought to be. Banking, book-keeping, and political economy may be said to have begun in Italy. The Florentine bankers, Bardi and Peruzzi, who lived in the time of Edward III. of England, and who lent him 1,365,000 golden florins, which he never repaid, were probably the forerunners of modern banking. The Florentine golden florins were made of 24-carat gold, and weighed one-eighth of an ounce, or a trifle-less than the English half-sovereign. The London street of bankers is fitly named Lombard Street, and its name indicates the home of the occupation that is there carried on.

Double entry was invented by the Italians; and in their early chronicles we see the prototypes of modern political economy. For instance, the three Florentine chroniclers, Giovanni, Matteo, and Filippo Vallani, deal not so much in the generalities of history as in painstaking statistical accounts of the population of their native city, the number of paupers and beggars, the number engaged in all the most important trades, the daily consumption of food, the style of dress and the manners of the citizens; and they also recount the economic consequences of the great plague which devastated Europe in the fourteenth century, the same plague which visited England in 1348 and was there called "the Black Death."

It is not generally known that the Italians of Tuscany were the earliest of European Free Traders. Sallustio Bandini, a Sienese gentleman, who was born in 1677, nearly a hundred years before the publication of Adam Smith's *Wealth of Nations*, induced the Grand Duke of Tuscany to grant complete freedom to the corn trade in his dominions. Mr. Montgomery Stuart's *History of Free Trade in Tuscany* gives an interesting account of Bandini's life and labours. "For one hundred and twenty years," he says, "the history of Tuscany is the history of free trade." Mr. Cobden, in 1847, speaking in Florence, said that to him "the Tuscan soil was the sacred soil of economic freedom."

The Florentines in the greatest time of their history were conspicuously a nation of shopkeepers. Nobles were expressly and jealously excluded from all share in the government. The whole city was divided into seven guilds or trade unions, called *Arti*, and from these the Signoria, or Government, was chosen. No man could become a magistrate who was not a member of one of the seven *Arti*. Dante was a member of the guild of physicians, and was prior of the city in 1300, the year in which he had the vision described in the *Divine Comedy*. He speaks in the first line of the *Inferno* of this year as "midway on the road of life," he being then thirty-five. As their name implies, the famous family of the Medici also belonged to the physicians' guild; their patrons were the doctor-saints, Cosmo and Damian, who are frequently represented in their red gowns and hats in pictures painted for the Medici. The family, however, appear from an early date to have abandoned doctoring for the more lucrative business of bankers and money-lenders. It is characteristic of Italian democracy that this family, who in the time of the greatness of Florence became her hereditary rulers, were at the beginning nothing more than well-to-do tradesmen, who were selected by their fellow citizens from time to time to serve the community in which they lived as magistrates and town councillors. One branch of their business, that of lending money on the security of goods deposited with them, has become in these days the not very distinguished trade of pawnbroking, and in the pawnbrokers' sign, the three balls, we still see the arms of the Medici.

Venice was at one time the greatest emporium of the shipping trade of the world. It was the chief seat of commerce with the East. It was, in fact, a sort of combination of Liverpool and Glasgow, for it not only was the main trading centre for ships, but it also contained the arsenal and docks where they were made and repaired. In the twenty-first canto of the *Inferno*, Dante compares one of the pits of hell with the great vessels of boiling pitch in the arsenals of Venice, and this in itself is some indication of the importance and size of the arsenal, as well as of its notoriety throughout Italy. The Venice arsenal was founded in 1104; in 1307 it was two miles in circumference and employed 16,000 workmen.

As mariners and discoverers the Italians need to quote no other names than those of Christopher Columbus the Genoese, and Marco Polo the Venetian.

No one needs to be reminded of the great achievement of Columbus. He has built for himself an everlasting name; his many disappointments, his inextinguishable belief in his mission, his final triumph, and the tragic issue of his great services, form a story that will read as long as the world lasts. It is sufficient here to say that such a man could not have been born except from a maritime and adventurous people. The great land traveller, Marco Polo, in 1260, when a lad of fifteen, accompanied his father Nicolo and his uncle Maffeo to Cathay, and there entered the service of Kublai

Khan; during his twenty-six years' residence in Cathay, Marco, as ambassador of the Khan, visited Thibet, Southern India, Southern Cochin China, and many other parts of the world, and saw those men and marvels which he afterwards described in his book of travels. Some of his routes are only known to have have been followed by Europeans twice since. Marco Polo's book, written, probably in French, at his dictation while a prisoner at Genoa, is a model of travellers' tales for all future time. A story is told of him that on his deathbed his friends thought it was a favourable opportunity to get him to confess that he had, to say the least, exaggerated one or two points in his narrative; but Marco stoutly defended his veracity, and said that if he erred at all it was in telling less than half the truth. It is to be noted as characteristic of Italy, that though the Polo family belonged to the Venetian nobility they were merchants and traders, and that the object of their journeyings was in the first instance purely commercial. A very good English edition of Marco Polo's travels, with an introduction giving an account of his life and of his family, has been published by Colonel Henry Yule.

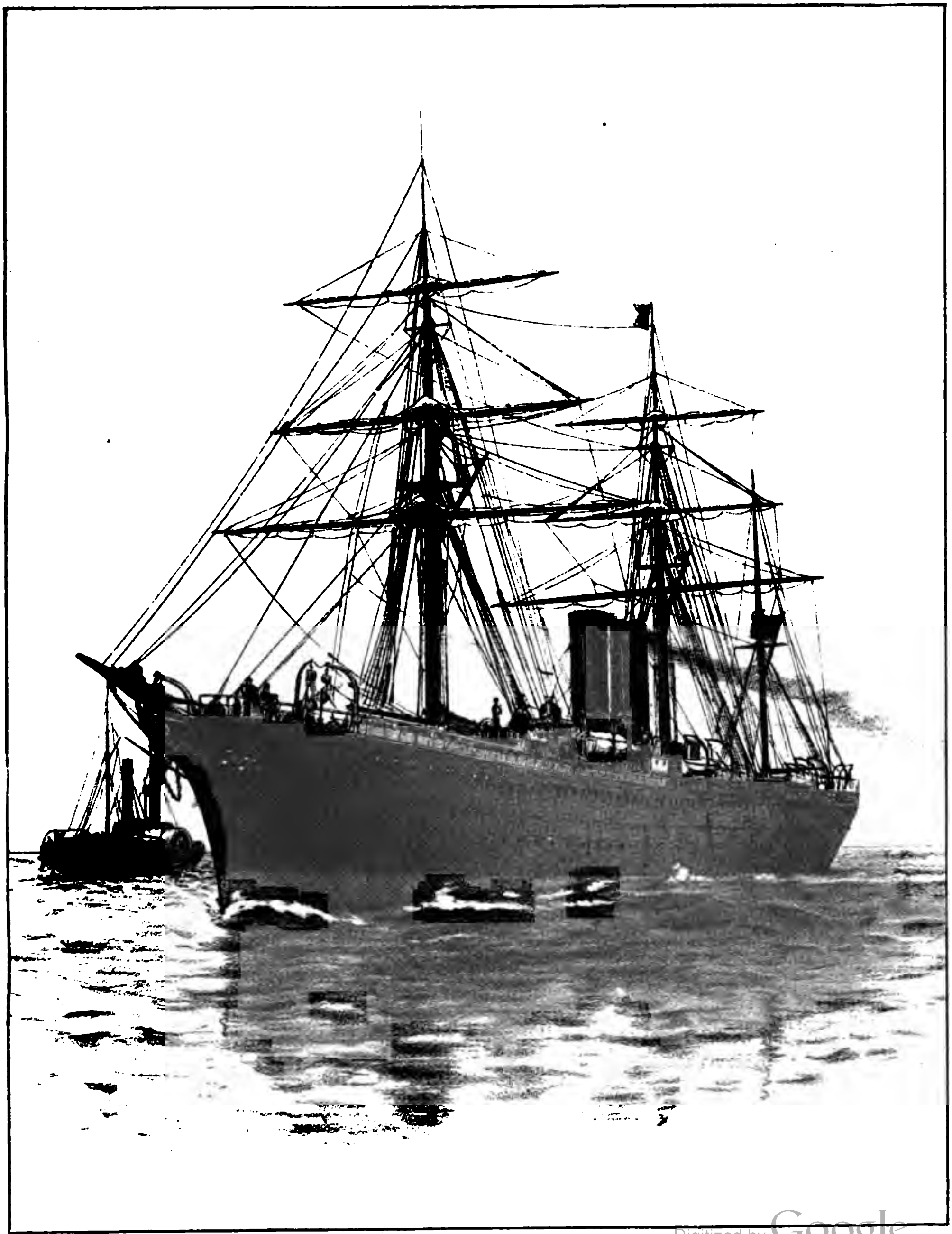
It is impossible in this short space to do more than glance most casually at the part which Italy played in the revival of learning that affected all Europe in the fifteenth century. One of the most interesting books to read on this subject is *The Renaissance of Italy*, by Mr. J. A. Symonds. The first volume, called *The Age of the Despots*, will be found especially valuable. One of the first signs of the Renaissance was the intense anxiety to discover and preserve all that remained to the world of antique learning and art. Mr. Symonds shows us, as types of this spirit of reverence for, and delight in, the learning of the past, "Petrarch poring over a *Homer* he could not understand, and Boccaccio in his maturity learning Greek in order to drink at the well-head of poetic inspiration." George Eliot, in *Romola*, has left an enduring picture of the same enthusiasm for classic lore in the person of old Bardo de' Bardi, Romola's father. The smooth-tongued Tito wins the proud old man from his accustomed suspicion and reserve by his knowledge of Greek Antiquities, and by the revelation that he has actually seen Athens and the Acropolis. It became a religion and an object in life to the men of the Renaissance to save every relic of classical antiquity. Mr. Symonds tells (*The Age of the Despots*, p. 23) a curious story of the profound sensation produced in Rome in 1485 by the discovery, on the part of some workmen, in a tomb on the Appian way, of the body of a beautiful girl, Julia, the daughter of Claudius. The art of embalming had been so successful, that the body presented all the appearance of youth and beauty. The excitement caused by the discovery was tremendous. All Rome flocked to Julia's coffin as to a shrine; her beauty was extolled as exceeding anything then known on earth; and the Pope, fearing that Julia would be worshipped instead of the orthodox saints of the Roman calendar, had the body secretly re-interred by night. The enthusiasm for classical antiquity was manifested in a manner more practically useful by the great work, in which Italy took the lead, of the printing of the classics. Aldo Pio Manutio (A.D. 1447—1515), the great Italian Printer, the founder of the Aldine Press and the Aldine Academy, preceded by a few years the great French and German Printers, the Stephani and Froben. It must be remembered that these great men laboured under difficulties almost impossible for us to realise. Printing had only recently been invented, or at any rate only recently introduced into Europe. Mr. Symonds describes the difficulties and the importance of the task in the following passage:—

"The text and the canon of Homer, Plato, and Aristotle had to be decided; Greek type had to be struck. Florence, Venice, Basle, and Paris groaned with printing presses. The Aldi, the Stephani, and Froben toiled by night and day, employing scores of scholars, men of supreme devotion and of mighty brain, whose work it was to ascertain the right reading of sentences, to accentuate, to punctuate, to correct for press, and to place beyond the reach of monkish hatred or of envious time that everlasting solace of humanity which exists in the classics. All subsequent achievements in the field of scholarship sink into insignificance beside the labours of these men, who needed genius, enthusiasm, and the sympathy of Europe for the accomplishment of their Titanic task. *Virgil* was printed in 1470. *Homer* in 1488. *Aristotle* in 1498. *Plato* in 1512. They then became the inalienable heritage of mankind. But what vigils, what anxious expenditure of thought, what agonies of doubt and expectation were endured by those heroes of humanising scholarship, whom we are apt to think of merely as pedants! Which of us now warms and thrills into emotion at hearing the name of Aldus Manutius, or of Henricus Stephanus, or of Johannes Froben? Yet this we surely ought to do; for to them we owe in a great measure the freedom of our spirit, our stores of intellectual enjoyment, our command of the past, our certainty of the future of human culture." (*The Age of the Despots.*)

It was characteristic of the Renaissance to fall down and worship everything, good, bad, and indifferent, that belonged to the great past of Greece and Rome; and it was not long before it became apparent that the passionate enthusiasm of the Renaissance for classical learning was antagonistic to religion, not only to monasticism, but to Christianity itself. The religious reformers, even one so noble and far-seeing as Savonarola, most strenuously attacked the then prevalent admiration for everything that belonged to the classical ages of Greece and Rome. He urged his disciples to destroy by fire all that savoured of worldliness and irreligion. Under this influence many invaluable manuscripts were consumed in the bonfires of the "vanities" that were made in the public squares of the cities of Italy. It thus really became a life and death struggle for what should be saved and made immortal by the printing-press.

The revival of learning in Italy was not confined to men; women were also influenced by the keen desire for knowledge, and the names of Vittoria Colonna, the friend of Michael Angelo, Tullia D'Aragona and Olympia Morata, are among those of the most distinguished learned women of the Renaissance period in Italy. In many of the most renowned universities of Italy women were professors: Maria Agnesi, of mathematics; Anna Manzolini, of anatomy; Betisca Gazzadine and Clotilde Tambroni, of Greek; so that in the field of the improvement of the education of women, as in so many other modern movements, Italy has been among the first to lead the way and set an example, although other countries have since gained a more leading place than she now holds.

It would be an omission, in speaking of the achievements of Italy in the multiform manifestations of human activity, not to refer to her religious and political reformers. The same men not unfrequently united both characters. Arnold of Brescia, a priest, in 1140 made an attack against the corruptions of both Church and Empire; he quoted the words of Christ, "My kingdom is not of this world," as a reason for separating the temporal power from the Papacy, and he "boldly maintained that the sword and sceptre were intrusted to the civil magistrate; and that the abbots, the bishops, and the Pope himself must renounce either their state or their salvation," (Gibbon's *Decline and Fall of the Roman Empire*). He actually succeeded temporarily in his contention with the Popes, and for ten years he was master of Rome, the Popes being in the meantime exiles in neighbouring cities. He endeavoured to rouse in the men of Rome the ancient Roman spirit of liberty and independence; but the death of the two feeble Popes whom he had been able to subjugate was followed by the election of the only Englishman who ever has been Pope. Nicholas Brakespear became Adrian IV. in 1154, and Englishmen can hardly be proud of the fact that he displayed the characteristic vigour of his nation by crushing the nascent liberties of Rome and by accomplishing the destruction of their founder. When Nicholas became Pope the Roman people asked from him a confirmation of the charter of their liberties. He consented conditionally on their delivering Arnold into his hands. This they indignantly refused and the Pope for the first time in history laid the city of Rome under an interdict. The unaccustomed suspension of all religious offices so terrified the people that a tumult ensued, and Arnold took refuge in a castle in Campania.



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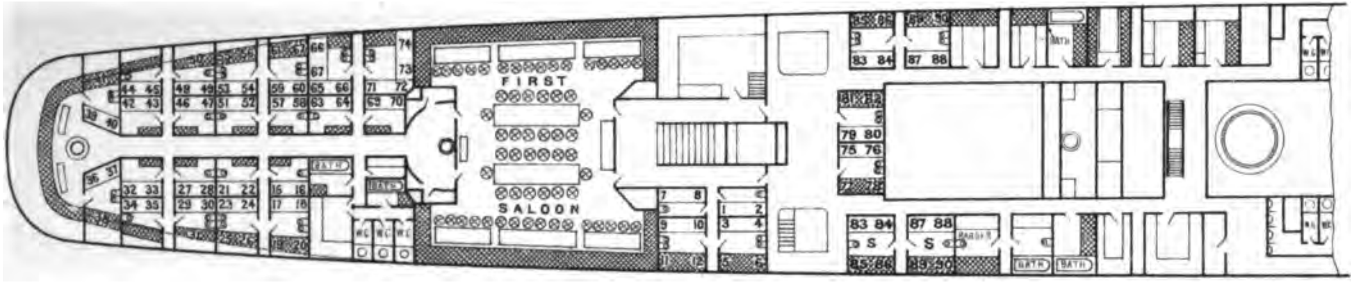
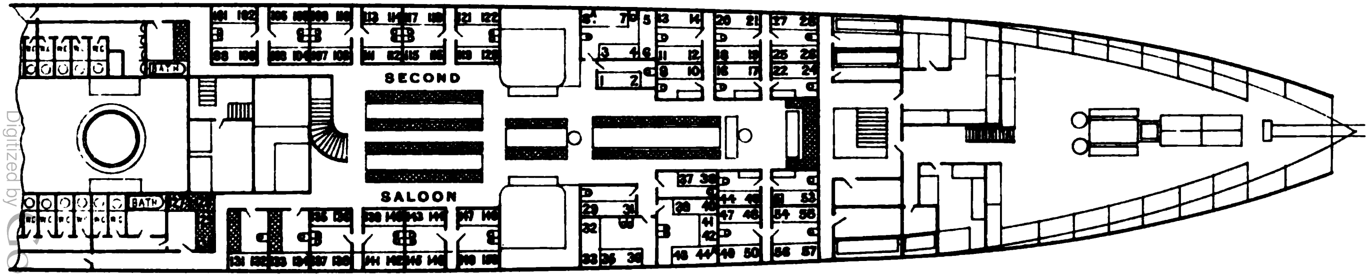
S.S. "IBERIA" & "LIGURIA."



IN 1ST SALOON CABINS ODD NUMBERS ARE UPPER BERTHS



IN 2ND SALOON CABINS LOWEST NUMBERS ARE UPPER BERTHS

Here, in 1155, he was taken by Frederick Barbarossa, the Emperor, who was on his way to be crowned by the new Pope. He delivered Arnold into the hands of Adrian, and in a short time Arnold of Brescia, whom the not too enthusiastic Gibbon calls "the martyr of freedom," was burnt alive and his ashes were thrown into the Tiber. There can be no doubt of Arnold's perfect disinterestedness and nobility of purpose. His name is still lovingly remembered by the Italian people as one of the earliest champions of their freedom.

The characteristics of the movement led by Arnold of Brescia were, the demand of liberty for the people and the relinquishment by the Church of its temporal power, and in these two demands he has been followed by many of the greatest minds Italy has produced. Dante, speaking of the temporal power, which was attributed by tradition to a gift made to the Pope Silvester by the Emperor Constantine the Great at the time of his conversion to Christianity, says, in the 19th Canto of the *Inferno*—

> "Ah! Constantine, to how much ill gave birth,
> Not thy conversion, but that plenteous dower
> Which the first wealthy Father gained from thee."

And in many other passages of his great poem he shows how deep was his opposition to the temporal power of the Pope. Of his love of liberty there are scarcely fewer evidences. He puts the pagan Cato into Purgatory, not into Hell, because of his love of liberty. He who knew how "salt the savour is of others' bread, how hard the passage to descend and climb by others' stairs," knew the value of political as well as of personal liberty, and his attachment to the Ghibelline, or Emperor's party, against the Guelph, or Papal party, is perhaps best understood if we look upon it as a manifestation of his eager patriotism, which was continually seeking a means for the realisation of his hopes for the unity of Italy. The policy of the Popes was to set one Italian city against another and profit by their discords. As a politician, no less than as a student and a poet, Dante abhorred these discords. He defined, in his *De Monarchiâ*, the end of man to be his intellectual activity, both active and contemplative; this, he said, could only be fully attained in times of peace, and peace could only be secured through establishing as a living reality the sway of the Emperor throughout Christendom. The dream of Italian unity, which is even now in process of receiving its full realisation, has ever floated before the imagination of the greatest Italians. It was as a means to this end that Dante threw in his lot with the Ghibelline party, and this explains not only why so devout a Catholic was the fiercest denouncer of the temporal power, but also why, in the *Inferno*, with a rather grotesque vehemence, he places Brutus and Cassius (the first traitors to the Empire) with Judas Iscariot, the betrayer of Christ, not only into the lowest pit of hell, but into the very jaws of Lucifer himself.

The most remarkable of all the group of priest-patriots of Italy was Savonarola (1452-1498), who, like Arnold of Brescia, paid with his life for his temerity in opposing despotism. He was burnt to death in Florence, on the 23rd of May, 1498. The life of Savonarola by Professor Villari is of the greatest interest. It has been translated into English. One does not know which side of Savonarola's character is the most noble, his burning passion for liberty or his burning passion for purity of life. Being summoned to the deathbed of his enemy, Lorenzo de Medici, the Magnificent, to confess him and give him absolution, he required of the dying man three things. The first was that he should place his faith in God and repent of his sins,—to this, as may be supposed, Lorenzo gave a ready assent; the second demand was that he should give back all moneys of which he had unjustly possessed himself,—after a pause, a slow consent was given; the third was that he should restore liberty to the people of Florence,—on hearing this, the harshest of the three demands made upon him, the dying tyrant turned his face to the wall in silence, and Savonarola left him unabsolved.

The effect of Savonarola's preaching was miraculous; the vast Cathedral of Florence was thronged with listeners, and as his voice echoed through the building, the only other sound to be heard were the sobs of the men and women who had gathered to hear him. The reports of his sermons, written down at the time by one of the auditors, frequently break off thus, "Here I was so overcome with weeping that I could not go on." His sermons were often as much political as religious, and in either case he did not confine himself to the vague generalities characteristic of the general style of sermons, but he called men and things by their right names, and denounced the vices that were poisoning the life and morals of his time. When he was first appointed Prior of St. Mark's, he refused the large gift of money with which Lorenzo de Medici sought to purchase his alliance. Later in his career he refused to be bought by the offer of the cardinal's hat. His incorruptible integrity was one of the secrets of his power, but he must also have had in a marvellous degree that most magnetic force and attraction which is the greatest and most inexplicable of personal gifts. Every one who came in contact with him felt its strength, and was forced either to submit to it or become his declared foe. The readers of *Romola* will remember how at his bidding, and without reason assigned save that it was her duty and the will of God, he made Romola renounce her already commenced flight from Florence. In the same way at his bidding, painters and philosophers renounced their art and learning and became monks. In the convent of St. Mark's, at Florence, of which he was Prior, we may still see his cell, his chair, and his Bible, and a marvellous portrait made still more marvellous by its extraordinary resemblance to the author of *Romola* who shared with Savonarola at least in this gift of magnetic personal attraction, which remains indefinable after all efforts to define it. Mazzini may in many ways be considered as the spiritual heir of Savonarola. He combined like Savonarola, the fervour of patriotism with the fervour of a moral and religious reformer.

The Waldensian Church, which was the earliest of the reformed Protestant churches, preceding the reformation of Luther by two hundred years, has its home in Italy. The Waldensian valleys are situated about thirty miles south-west of Turin, and Waldensian congregations, whose ritual and doctrine resemble very closely those of the Presbyterians of Scotland, are to be found in nearly all the principal towns of Northern Italy.

The names of Giordano Bruno and of Galileo will always be associated together as the "martyrs of science," as truly as Arnold of Brescia was the "martyr of liberty." Both suffered cruelly for their zealous advocacy of the Copernican theory of astronomy. Bruno, who spent two years in England, where he wrote his best works, was of the type of the modern scientific propagandist—fiery, courageous, and bitter-tongued. One of his biographers has called him "the knight-errant of modern philosophy." The passion of his life was the acquisition of knowledge, and he believed that it was possible to become "the master of every science." It is probable that his love of learning first led him to a monastic life. In 1568, at fifteen years of age, he joined a Dominican monastery at Naples; after a year's probation he took his vows; and eight years later, in 1572, he was admitted to priest's orders. Doubts of his orthodoxy had before this arisen, but in 1576 they became so pronounced that proceedings were instituted against him. On hearing that his cause was to be heard in the papal courts, he cast off his ecclesiastical dress and fled to Genoa. Henceforward, till he came again within the reach of his enemies, he travelled over Europe from capital to capital, and from university to university, lecturing and disputing wherever he stayed. Geneva, Lyons, Toulouse, Paris, London, Oxford, Prague, Frankfort, and Zurich, each offered him a temporary shelter. Personal troubles followed him wherever he went. He was a man of extraordinary brilliancy, but of vehement temper and sharp tongue. His adversaries were, in his eyes, "pedants, sophists, asses, pigs, or hypocrites." The Oxford dons were described by him as "adorned with gold chains, and smelling of Greek and beer." He also said that, for all their learning, they had the manners of ploughmen. It is not surprising, therefore, that the hospitable welcome he had met with when he first went to Oxford soon wore out. After a three months' residence and the delivery of two courses of lectures, his stay at the university was brought to an abrupt termination. Oxford at that time cooled the ardour of unorthodox philosophy by five shilling fines. But Bruno was destined ere long to find that his ultramontane adversaries had a more effectual way of showing their disapprobation of his teaching. In London, where he stayed from 1583 to 1585, Bruno was the friend of Sir Philip Sidney and Fulke Greville, of Burghley and Walsingham. He was a favourite with Queen Elizabeth, who liked to converse with him in his native tongue. He was the guest of the French ambassador, and from this fact it is argued that his rupture with the Church of Rome could not at this time have been complete. Recent researches have proved that he re-visited Venice in 1592; he then took the occasion of the accession of a new Pope, favourable to learning, to endeavour to bring about a formal reconciliation between himself and the head of the Church. The failure of these attempts seems to have been due to one of Bruno's secular enemies. This man vented his own personal rage under the pretence of zeal for religion; he took Bruno prisoner and handed him over to the ecclesiastical authorities. He was at first in a very yielding temper and would have made peace with the church on its own terms. While, however, the case against him was still pending, the Roman Inquisition claimed him as their prisoner. After this Bruno's wish for reconciliation and willingness to show an attitude of submission disappeared. He was brought to Rome and thrown into prison in 1593. After seven lonely years of suffering, he was first excommunicated, and then burned to death in the Campo di Fiore, Rome, on the 17th February, 1600; thus, says one of his biographers, "expiating the crime of teaching that the earth moved, the church having declared it to be stable."

The fate of Bruno darkened the brilliant career of his greater contemporary, Galileo Galilei. Galileo was born in Pisa in 1564, and was consequently thirty-six years old when Bruno was executed by the Inquisition. Bruno's fate could not indeed dim the brilliancy of Galileo's genius, nor detract from the value of his discoveries and inventions; but there can be little doubt that it cowed his naturally bright and vivacious courage, and it is responsible for the humiliating spectacle witnessed on the 22nd of June, 1633, in the church of Santa Maria sopra Minerva, in Rome, when the veteran scholar, then in his seventieth year, was forced to read out his public recantation of the Copernican theory, and where he afterwards received his sentence, "being vehemently suspected of heresy," of incarceration during the pleasure of the tribunal, and by way of penance to recite once a week for three years the seven penitential Psalms. Samson, "eyeless in Gaza at the mill with slaves," cannot have been a more tragic sight than this great man, whose labours had added so prodigiously to the sum of human knowledge and human happiness, made to bow beneath the yoke of ignorance and superstition.

> "O glorious strength
> Put to the labour of a beast, debased
> Lower than bond slave!"

Tradition has handed down an anecdote about Galileo which has given rise to one of the most familiar of Italian sayings or proverbs. It is said when the philosopher had finished the utterance of his public denial that the earth moved, he muttered to himself as he descended the tribune, "*e pur si muove*," "it *does* move nevertheless." The earth's "diurnal course" cannot be stopped by mere assertions that it is stationary. The eight years that were left to Galileo of life were trebly darkened; the shadow of the Inquisition hung over him; even after his imprisonment was over he never fulfilled his wish of returning to his beloved Florence. These last eight years were spent at the Villa Martellini, at Arcetri; and to crown his sorrows he lost his sight. During these years at Arcetri, and after he had lost his sight, he was visited by Milton, then at the outset of his career. A curious parallel might be drawn between these two great men: both rendered inestimable services to mankind; both became blind; both, after a brilliant and triumphant manhood, were triumphed over by the basest enemies. Milton refers to Galileo in the fifth book of *Paradise Lost*:—

> "As when by night the glass
> Of Galileo less assured observes
> Imagined lands and regions in the moon."

Those who care for the stringing together of dates may like to be reminded that the birthday of Galileo, February 18th, 1564, was the death day of Michael Angelo. The year of Galileo's death, 1642, was the birth year of Sir Isaac Newton. Of Galileo's inventions and discoveries it is only necessary to enumerate the most important. He was the inventor of the thermometer, and though not the inventor of the telescope he greatly improved upon the original idea of its inventor, and beginning with making a telescope with threefold magnifying power, he soon produced one of thirty-twofold magnifying power. He made with his own hands hundreds of these, which where in demand all over Europe. He applied the action of the pendulum to clockwork. His astronomical discoveries comprised Jupiter's satellites, the phases of

Venus, and sun-spots, and he made observations which led to the discovery of Saturn's rings. As a controversialist he was brilliant, witty, and convincing, and it was this, probably, as well as his European reputation, which drew down on him the special wrath of his adversaries.

A very slight sketch has now been made of some of the great sources of interest which a visit to Italy presents. Half-a-dozen great names only have been selected from the hundreds which the barest review of Italian greatness would suggest. In the remainder of the space at my disposal I will try to tell intending travellers what I have seen, and what I think they will most enjoy seeing, at some twenty Italian cities and towns, lying between Naples in the south, Venice in the north-east, and Milan in the north-west. Those who have once been to Italy will want no persuasion to go there again. The saying is, that to go once to Italy is to spend all the rest of one's life longing to go there again, and it is true that love of Italy becomes a deep-seated and life-long emotion to those who have once felt her power and fascination. Without being either an artist, or in any way a specialist in any of Italy's many specialties, I can honestly say that if I was told at this moment that I was dying, not my first, nor my second, but certainly my third thought would be that I should never see Italy again.

Before proceeding to speak more particularly of Naples it may be worth while to point out that if the traveller is free to choose his own time for a visit, the best beyond all doubt is the late spring; May is better than April, and April is incomparably better than March. June in Tuscany, to any one who is not afraid of sunshine, is delicious. The whole country runs over with flowers; every field is bearing its threefold crop—vines, fruit-trees, and corn; everything is characteristically Italian, true to the Italy of one's dreams. There is a drop of bitterness in the traveller's cup when he finds that the "sunny south" in March is exceedingly bleak and cold, that there is a great deal of rain, that piercing winds find their way through the warmest clothing, and that the Mediterranean is not so blue after all. But May and early June are perfect for the great cities, such as Rome and Florence, which are not on high ground; April and May are also the best months for South Italy and Sicily. The whole summer, except perhaps July, may be very happily passed by those who like heat in such place as Perugia and Siena, which are perched on their hilltops and are seldom exhaustingly hot. To spend the autumn in some of these high Umbrian towns, and see the vintage, would be a delightful way of taking a holiday.

The English or Australian visitor who is spending the summer or autumn in Italy should of course be careful not to subject himself to violent variations of temperature; he should not take exercise during the hottest part of the day, and he should in the matters of food and drink imitate the abstemiousness of the Italians; he should there, as elsewhere, avoid over-exhaustion, either physical or mental. A light camp stool, such as can be bought in Rome for two or three lire in shops which supply artists' materials, should form part of the daily equipment of every lady traveller. The fatigue saved by its possession is enormous. If every member of the party can be induced to take one so much the better; those who most need the rest can then take it with an easy conscience. An air cushion for railway journeys is a very agreeable companion and saves much unnecessary fatigue. Some travellers, who at home never take more than an hour's exercise a day, and doze over a newspaper, a pipe, or their knitting, for several hours out of twenty-four, go to Italy and are on their legs from morning to night; the day's programme is:—An early breakfast, and churches, galleries, and museums till two; then a hurried luncheon, and museums, galleries, and churches till dinner time; dinner time over, they rush out again to the theatre or what not. After a few weeks of this life they are surprised to discover that they do not feel well; they are so exhausted that they are susceptible to fever or any other malady; they come home ill and dispirited, and say they are really afraid to go to Italy again, the climate is so unhealthy. If they lived the same exhausting life in the healthiest place under the sun, the result would be the same. There is so much to see in Italy that there is every temptation during a short visit to try to do too much, but after a certain point of exhaustion is reached it is impossible to digest more sights, and rest becomes an absolute necessity. The best disposition of one's time is generally to see galleries and churches in the morning, when one is at one's freshest, a plain substantial meat luncheon should follow, and a good hour's rest should be taken in the middle of the day; a driving excursion to some place of interest a few miles out of town is a most refreshing and delightful occupation for the afternoon. After dinner the wise and the prudent will read their guide-books for an hour, and go to bed at half-past nine.

Murray's guide-books are well known by all English travellers. The small size of Bædeker's make them more convenient for carrying in the pocket. Appleton's European guide-book for English-speaking travellers is conspicuous for its mixture of brevity and accuracy. Two well-printed volumes deal with the whole of Europe, Egypt, and Palestine. Hare's *Walks in Rome*, *Days near Rome*, and *Cities of Italy*, are invaluable. Burn's *Old Rome* is, as its name implies, a guide to Roman archæology. Horner's *Walks in Florence* is on the plan of Hare's *Walks in Rome.* No one should be without Mr. Ruskin's delightful little guide-books for Florence and Venice. There are six or seven tiny books for each place, which can generally be bought at the principal booksellers in Florence and Venice.

There is a new new edition of *The Stones of Venice* lately published. *Historical and Architectural Sketches, chiefly Italian*, by Mr. E. A. Freeman, the historian, is extremely good; as are also Mr. Symond's *Sketches in Italy and Greece*, Crowe and Cavalcaselle's *History of Painting in Italy*, Kugler's *Handbook of Painting*, Mrs. Jamieson's *Sacred and Legendary Art*, Lord Lindsay's *Christian Art*, and Miss Louisa Twining's *Symbols and Emblems of Early Christian Art*. Among books that without being in any sense guide books will contribute very materially to the enjoyment and right understanding of Italy, are Sismondi's *History of the Italian Republics*, Bryce's *Holy Roman Empire*, Symonds' *Renaissance in Italy*, Hodgkin's *Italy and her Invaders*, Burckhardt's *Civilisation of the Period of the Renaissance in Italy*, and Professor Middleton's *Ancient Rome;* and among stories, *Romola*, by George Eliot, should be read in Florence; and in Naples, *The Last Days of Pompeii* by Lord Lytton; *Transformation* by Nathaniel Hawthorne, and *The Improvisatore* by Hans Christian Andersen, should be read in Rome; and in Milan readers of Italian will enjoy *I Promessi Sposi* by Manzoni.

At the risk of being guilty of a bull, it must be said that the best things in Naples are out of it. Naples without Vesuvius, Pompeii, Pæstum, Sorrento, and the other delightful places in its vicinity, would scarcely in itself detain the ordinary traveller long. Scientific people are attracted to Naples by the Observatory, Botanic Gardens, Aquarium and Zoological Station. The supposed tomb of Virgil may demand "the passing tribute of a sigh:" but the main attractions of Naples, are first, the splendid views of the bay and the surrounding country to be had from the heights above the town, and secondly the Museum. Many of the best of the art treasures found at Herculaneum and Pompeii are preserved in this Museum, and frequent visits there alternating with visits to Pompeii, will be of great use and interest.

The ancient bronzes in the Museum of Naples are worth any journey one may have made to visit them. Most people will feel that they are a revelation of what bronze statuary can be. There is nothing to be compared with them anywhere else. The exquisitely delicate modelling, the life, the movement, illustrate the surpassing excellence of antique sculpture. Here, for the first time perhaps, the visitor understands what art critics mean when they speak of bronze as the best of all the materials of sculpture, because it is nearer than anything else to the first thought, the original conception of the artist. This dictum is almost unintelligible when one illustrates it by the bronze statues to be seen in the streets of London and other English towns; but in the Naples Museum the meaning is plain enough. The sculptor puts all the beauty and life which his genius can conceive, and his hands create, into the clay model, and all this is transferred by a mechanical process to the bronze; whereas, in marble there are many more intermediate stages, many more touches from the mere mechanic's hand between the clay model of the artist and the finished statue. It may be interesting to note one curious distinction between antique and the best modern bronzes. A bronze statue is never solid: the hollow part inside the statue which is called *the core*, in modern work is rough and shapeless, leaving the bronze all round an inch or two thick. But in antique bronzes the core is as finished in form as the statue itself: the ancients must have used in casting two perfect models, the one inside the other, the space between the two being surprisingly thin and fine; the bronze of which the statue is made is often so thin as to suggest that the ancients must have had secrets in the art of casting which are lost to the modern world. The best modern bronze casting is now to be seen at Munich.

Another kind of art can scarcely be studied better than at Naples. The discovery of so many intact frescoes on the walls of Pompeii enables us to judge more completely than had before been possible as to how far the ancients had mastered the principles of pictorial art. It must be allowed that, considering their position as sculptors, and the immense proficiency they showed in bronze casting, and other arts of the kind, their paintings are strangely deficient. Some of the figure subjects are full of vigour and spirit, and are correct in drawing and colour, but their landscapes, and views of buildings, have for the most part, the grotesque perspective which we associate in our minds with the art of the Chinese, and are as like nature as the view on a willow-pattern plate. The chambers of the Museum in which the frescoes—and the mosaics, which partake of the same characteristics—are exhibited, are near the entrance on the ground floor, and should on no account be overlooked. The marbles and the principal bronzes are on the same floor, and a small Egyptian collection which may be neglected by a traveller who has seen the British Museum, or who is going on to Cairo.

The marbles are especially fine at Naples. The Farnese Bull was brought from Rhodes to Rome before the time of Pliny. It is, or rather was, for it is now in many pieces, sculptured from a single block of marble, the artists being Apollonius and Tauriscus (third century B.C.). Michael Angelo himself carried out the principal restorations, and so added a new interest to this remarkable group. The subject is Antiope intervening in favour of her rival, Dirce, whom her sons are about to bind to the horns of a wild bull. The Farnese Hercules is another piece of ancient sculpture, the work of Glycon of Athens, and was also repaired by Michael Angelo. The portraits of Roman Emperors are very fine and worthy of careful study. One of these ground floor chambers is well-named the "Hall of the Capolavori," or masterpieces, and contains the well-known bust of Homer, the statue of Antinous, the supposed statue of Aristides, the Venus of Capua, the Gladiator, and above all, the lovely Psyche, found in the amphitheatre at Capua, a mere fragment, but one of the most exquisite and inimitable pieces of sculpture in the world.

In the upper rooms we may indulge in many different kinds of artistic and antiquarian pleasure. The pictures comprise some charming Corregios, including the brilliant "Marriage of St. Catherine;" Titian's portrait of Philip II.; Raphael's "Madonna del Divino Amore;" a doubtful, but beautiful Van Eyck; and many works of the once flourishing Neapolitan School. Passing to the smaller sculptures, we may specially notice one, the relief which represents Orpheus parting for the last time with Eurydice: an affecting group, in the best and simplest style of ancient art.

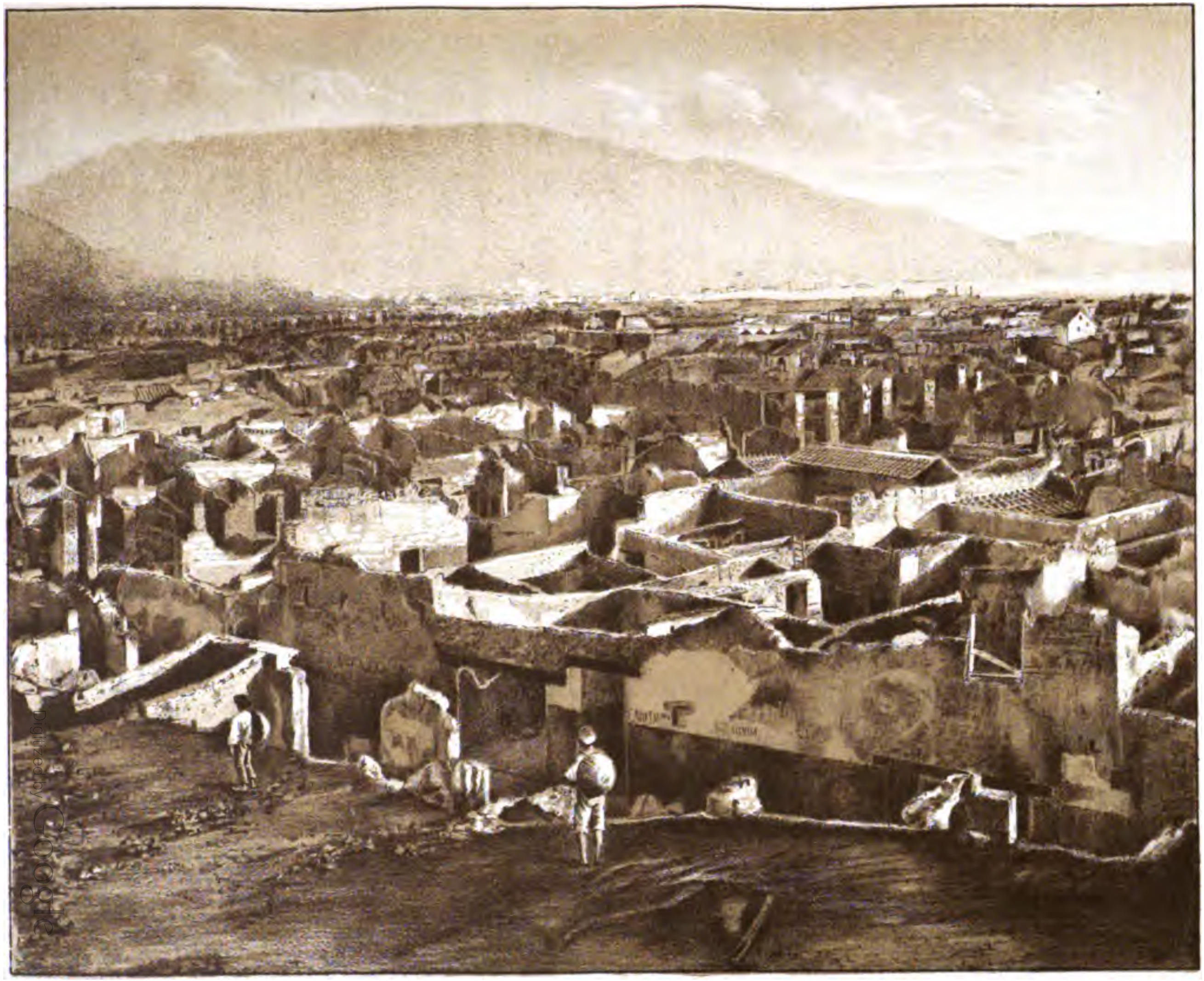
Finally, neglecting many attractive chambers, we come to those which contain the common objects found at Pompeii; the chairs and tables, the bread and eggs, the combs and toothpicks, the surgical instruments and painted vases, the iron stocks and loaded dice which have been found from time to time, and have been brought here; nor should we omit to visit the papyrus room, with its skilfully unfolded and often half-charred fragments of the scanty literature of the first century. Nearly all come from a single chamber or library at Herculaneum.

Rightly to understand Pompeii when we go there, it will be well to make a careful study of the accurate model of the remains visible of the buried town, which is to be seen in one of the rooms.

Fortunately for English-speaking visitors, an admirable and easily intelligible catalogue can be had at the museum.

Although the best bronzes in the Naples Museum were found at Herculaneum, not Pompeii, the latter place is by far the most interesting. Herculaneum was buried in lava, Pompeii in ashes. Thus the ruins at Herculaneum have had to be hewn out of a substance as hard and solid as rock; whereas, the ashes which covered Pompeii have become converted into soft and easily worked earth, which can readily be removed by spade, pickaxe and hand. Moreover, the site of Herculaneum has been repeatedly covered by successive eruptions of lava and ashes; consequently the ruins which have been excavated, lie at a great depth (forty to one hundred feet) below the present surface. This makes a visit to Herculaneum resemble in some respects a descent into a mine; the dim torch of the guide is a poor substitute for the glowing Italian sunshine that will light the visitor to Pompeii.

ITALY



EXCAVATIONS OF POMPEII.

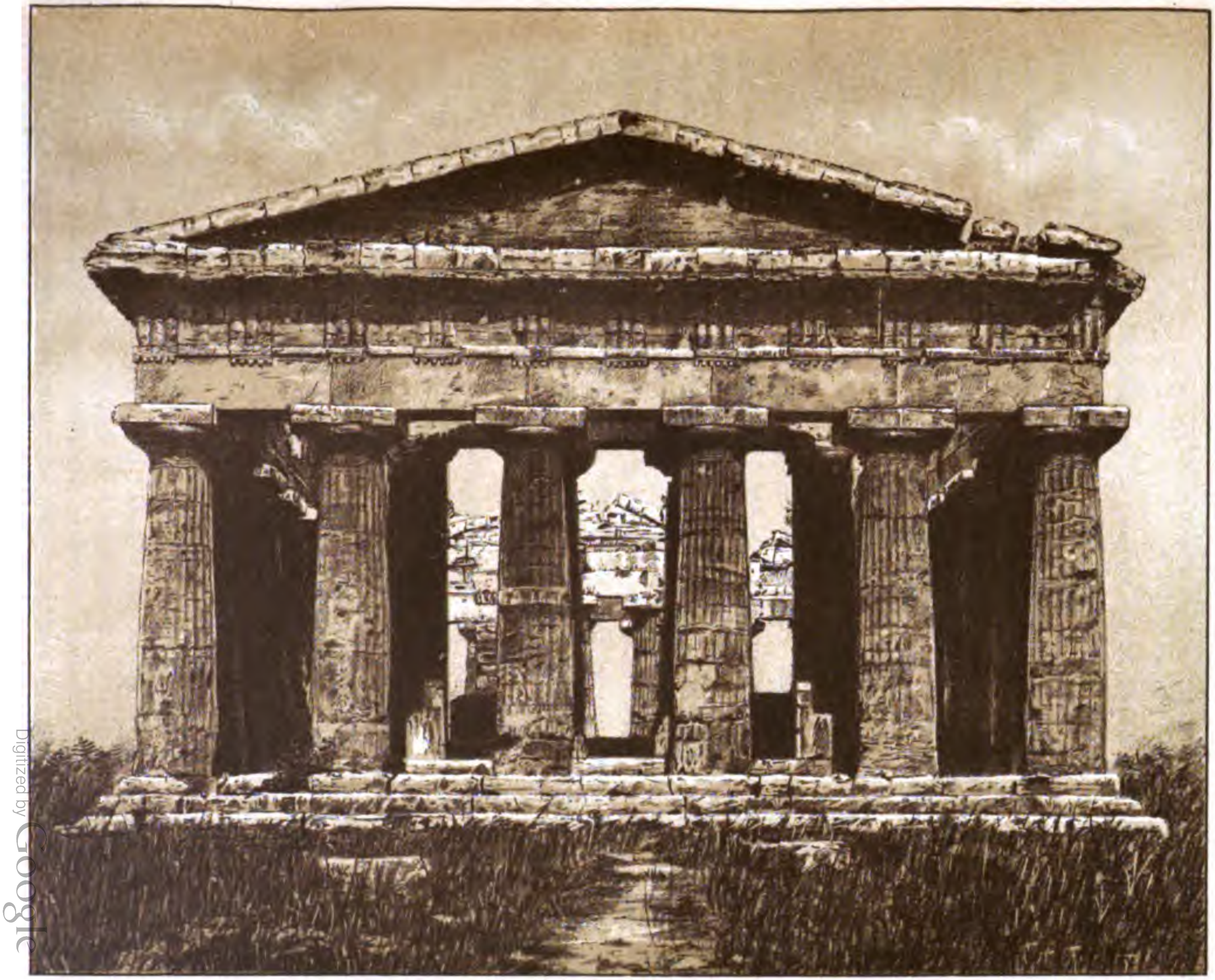
The interest of Pompeii is like nothing else in Italy or perhaps in the world; repeated visits only add to the wonder and awe of the first impression. Here we see a city of the dead, dead these eighteen hundred years, and yet the Pompeiians seem strangely real and alive as we tread the silent streets. The marks of the chariot wheels are there; the oil jars are in the shops; the drinking fountain is there with the soft stone worn by the pressure of hands that were living when Jesus dwelt on earth; the baker's loaves are in the oven; the splendid bath is there with the vases for ointments and perfumes; in the museum attached to the ruins may be seen the casts taken of human figures crouching together or clasped in one another's arms as they were when the last awful moment came. One of the casts here is that of a dog which has fallen on its back with its feet in the air; the attitude of the poor beast expresses pathetically the horror of the fate that overwhelmed it, together with its human fellow creatures.

One feature of Pompeii, which is not often dwelt on by guide books and travellers, is the exquisite beauty of its surroundings. Vesuvius sends its pillar of smoke into the blue sky on one side, on the other is the Bay of Naples, with Castellamare and Sorrento sparkling like jewels on its shore.

It is remarkable how little has been discovered at Pompeii since the publication of Sir William Gell's book. Still, the number of small, but by no means unimportant objects has been considerable, and adds greatly to our knowledge of the domestic life of the ancient Romans. The great public statues, fountains, columns and altars were among the first things dug out, for no difficulty impeded the discovery of the chief buildings, for the upper wall of the great theatre was always visible above ground. In 1748 a peasant sinking a well found a painted chamber, and the King of Naples, Charles III., who had been much interested by the discoveries at Herculaneum a few years before, carried on the excavations. They have never ceased for any long perid since, yet only about three-fifths of the whole area has been cleared.

The following passage appeared in a weekly paper on the occasion of a centenary celebration of the destruction of Pompeii, which, with very questionable taste, was held as a kind of festival by the Italians in 1879:—

"The domestic life of the Romans in the early days of the Empire, so soon after the close of the life of Cicero, whose villa here has been uncovered, cannot be studied so well anywhere else. Here is the dog chained on the threshold, as described by Petronius; the miserable cells in which the slaves slept are by the door, and the skeletons of porters have been found still wearing the brazen key-ring which was their badge of office. In the smallness of the private chambers we recognise the habits of a people who were seldom indoors, and who spent their time in the forum, the theatre and the baths. The largest rooms in the most magnificent villa are but twenty feet square. The dismal windowless streets betray to us a feeling that the house, when its owner did retire to it, should be completely private. He knew of no higher luxury than that of his own time, or he might have desired window glass, chimneys, a clock, a box of matches. We read of a wife who, because the baby cried in the night, and the lamp had gone out in the hall, had to go to a neighbour's house for a light. In cold weather—and there is often snow on the slopes of Vesuvius—he would take refuge in the public bath, unless the bath was closed for a national mourning, or in the evening, for the stoves of the calidarium were put out at sunset. In hot weather he would lie under the portico of a temple, or in the atrium of a rich man's villa, and listen to the playing fountain. There were many slaves in Pompeii, and it seems to follow that there must have been many "mean whites." Their life must have been that of the late unlamented Lazzaroni, but untempered with the blessings of even modern Neapolitan Christianity. For the mean white of old Pompeii there was little employment of a remunerative kind. All the work was done by slaves. He slept on the roof of a house to be out of the reach of the dogs. He wore in summer no clothes to speak of, and a blanket in winter if he could get one. He stretched his brown legs under the sunny side of the wall till the public bath was warm enough, and breakfasted on a water melon, which, as the modern Neapolitan boasts, combines the advantage of providing both food and washing. He perhaps turned an honest penny when he held the horse of some young patrician who had driven his chariot to the door of the money-lender, or guided it over the stepping-stones at the crossing. After this unwonted exertion he would sit down by the wall and rest only for the "Discede morator" painted up, for, though he cannot read, he knows the meaning of the snakes. At evening he watches the long procession of women going down to the Sarnus with their water-jugs, and wishes he had money enough to marry one of them. He looks forward to a gift of bread from the new edile, and on free days endeavours to take his pleasure in the amphitheatre; but as he grows old, he knows that starvation is before him, for there are no almshouses or hospitals in Pompeii, and pity is unknown in Roman bosoms. Priests do not notice such folk as he is, and he has no reason to suppose that Mercury or the deified Augustus will succour him, either here or hereafter. San Gennaro behaves better to his modern votary. The sky wears a different aspect. The bay and the volcano and the men are the same; but everything else is changed. It would be interesting to



TEMPLE OF NEPTUNE,
PÆSTUM.

reconstruct the life of a Pompeian and to compare it with the life of a Neapolitan; but the result would perhaps be too depressing. That eighteen Christian centuries have done so little for him, that, except for an easier life, more comfort, coal, gas and charity, he is much what his ancestor, or at least his predecessor was, when it rained ashes upon Pompeii, is only another example of the South American saying, that when the conditions of life are too easy, civilisation flags. Why should a man do work if he can live without it? There are workers and industrious people at Pompeii at the present day, and we must hope that the course of time and the influence of free institutions will teach the Neapolitan of the future to value a little more highly common honesty, abstract truthfulness, decency and reverence."

A surprise is in store for the traveller who drives from Naples to Pompeii. The distance is about fourteen miles, and if determining to forsake the railway, he propose to himself the pleasures of a country drive, he will be disappointed, for every yard of the fourteen miles is through a swarming mass of human beings; it is one long street, all the way, just as much as the drive between London and Greenwich. The province of Naples is probably the most densely populated part of Italy. Naples contains a larger population than Melbourne, Adelaide and Sydney put together. It has usually been estimated at between 600,000 and 700,000: Baedeker gives the population of the whole province, exclusive of the city, at 1,000 per English square mile.

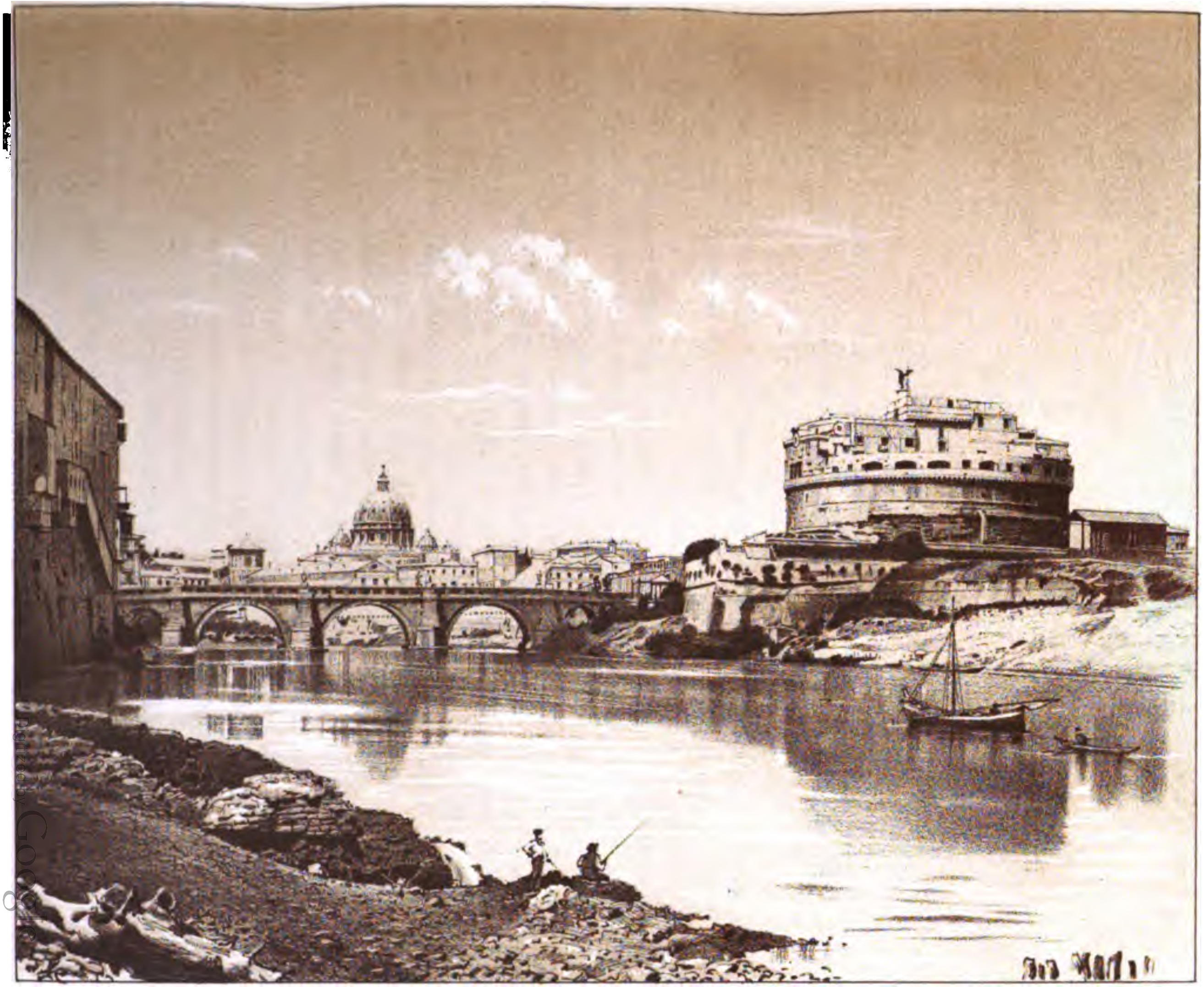
No one who is well supplied with time and money should be at Naples without seizing the opportunity of visiting the splendid Greek temples at Pæstum. The Greeks were the colonising people of antiquity, as much as the English are the colonising people of to-day. Southern Italy and Sicily became, (700—600 B.C.) through the Greek colonists, almost as Greek as Greece herself. The Greeks called their Italian Colonies "Magna Græcia," just as the English Colonies have been called "Greater Britain." Pæstum should therefore be of special interest to modern colonists, as showing what their forerunners, the Greek colonists in Italy, were able to do in the way of architecture. Will travellers visit New South Wales, two or three thousand years hence, to see the mighty works wrought there by British colonists?

Castellamare, Sorrento, Capri and Salerno, may all be visited on the way to or from Pæstum, within the compass of a single week. "It is not given to every one to go to Corinth," or any other part of Greece, and the temples at Pæstum are in such perfect condition, that a traveller who has seen them will the less regret his inability to visit the Parthenon. They are all three in the same Doric style, and depend for their effect entirely on proportion and not at all on ornament, though we may, of course, suppose that they were decked with sculpture.

Poseidonia, as its inhabitants, the Greek colonists called it, was founded in the seventh century B.C. and, as the name imports was specially sacred to Poseidon, or Neptune, The principal temple, which is 90 feet long, was probably that of the sea god, and is very perfect, not a single column being wanting. The so-called "Basilica," and the temple attributed to Ceres are also very perfect, and the visitor should if possible walk along the top of the old city walls, still in places quite intact, to obtain a view of the whole group.

The sunny delights, the orange gardens of Sorrento must not be neglected; the islands of Capri, Procida and Ischia (the scene of the recent earthquake) make charming resting places to those who require breathing time before exploring further the wonders of Italian towns.

ROME



ST PETERS, FORT ANGELO & TIBER.

CHAPTER VII.

CITIES OF ITALY.

ROME.—THE CAMPAGNA.—EXCURSIONS.—ASSISI.—PERUGIA.—CORTONA.—AREZZO. —SIENA.—PISA.—FLORENCE.—MONTE OLIVETO.—BOLOGNA.—RAVENNA.—FERRARA.—PADUA.—VENICE.—VERONA.—MILAN.—TURIN.—GENOA.

AS many travellers by the Orient Line find it pleasant, after landing at Naples, to proceed northward by land, the following notes by Mrs. Henry Fawcett, may be useful.

Rome is of such stupendous and of such varied interest, that it is difficult to say anything about it in such a sketch as the present that does not seem absurdly inadequate. Rome may be said to contain many Romes: Rome of the ancient Republic, Rome of the Cæsars, early Christian Rome, Rome of the Popes, and Rome of to-day, the seat of government, and once again the capital of United Italy. A traveller who has made a special study of one only of these Romes (except perhaps the last) will find enough in Rome to occupy and interest him for the rest of his life; while the ordinary traveller who is not a student will be overwhelmed by the enchantment of the city. Gibbon, owning that his temper is not very susceptible of enthusiasm, says of his first sight of Rome:—"At the distance of twenty-five years I can neither forget nor express the strong emotions which agitated my mind as I first approached and entered the Eternal City. After a sleepless night, I trod with a lofty step the ruins of the forum; each memorable spot, where Romulus stood, or Tully spoke, or Cæsar fell, was at once present to my eye; and several days intoxication were lost or enjoyed before I could descend to a cool and minute investigation."

Thackeray, in *The Newcomes*, describes the rush of feelings which the first sight of Rome awakens:—"Many of us, young or middle-aged, have felt that delightful shock which the first sight of the great city inspires. There is one other place, of which the view strikes one with an emotion even greater than that with which we look at Rome. where Augustus was reigning when He saw the day, whose birthplace is separated but by a hill or two from the awful gates of Jerusalem.

Who that has beheld both can forget that first aspect of either? At the end of years, the emotion occasioned by the sight still thrills in your memory, and it smites you as at the moment when you first viewed it." Thackeray makes Clive Newcome write, "I think I have lost sight of St. Peter's, haven't I? Yet it is big enough. How it makes your heart beat when you first see it? Ours did as we came in at night from Civita Vecchia and saw a great ghostly darkling dome rising solemnly up into the grey night, and keeping us company ever so long as we drove, as if it had been an orb fallen out from heaven with its light put out. As you look at it from the Pincio and the sun sets behind it, surely that aspect of earth and sky is one of the grandest in the world."—*The Newcomes*, vol. i., chap. xxxv.

The Italian traveller whose time is short is strongly urged to avoid Rome at Easter. There is a sort of fashion to be in Rome at Easter—a survival from the time when gorgeous Church ceremonies drew all the world as on-lookers. But since Rome has been given back to Italy the glories of the Papacy have departed; the ceremonies are gorgeous no longer, but portentously dull and dreary. Moreover, between fasting and feasting two-thirds of the sights of Rome are closed during the greater part of Holy Week and Easter Week.

One of the central spots of interest in Rome, and one of the most beautiful, is the place where the flight of steps leading up to the Capitol joins the immense flight of steps leading up to the Ara Cæli church. This church is on the site of the temple of Jupiter Capitolinus. The tradition is that Augustus erected an altar there to commemorate the prophecy of the Delphic sibyl respecting the birth of Christ. On those steps, when the church was a pagan temple, the priests (133 B.C.) thrust out Tiberius Gracchus who sought sanctuary there, and he was killed by the patrician mob; on those steps, fifteen hundred years later the priests, for history repeats itself, though the pagan temple had become a Christian church, barred their door against Rienzi, who died there (1354) covered by a hundred wounds. Julius Cæsar is said to have descended these steps, or others on the same site, on his knees after his victories in Gaul and Britain. Half-way up the steps of the Capitol the typical Roman wolf is kept in the little garden on the left hand side as one goes up. At the top is the bronze equestrian statue of the great Emperor Marcus Aurelius, and as one looks round at the mingled majesty and simplicity of the place, one is reminded that the present arrangement and disposition of the approach to the Capitol was designed and carried out by Michael Angelo. Gibbon first conceived the scheme of writing the *Decline and Fall of the Roman Empire* near this spot. "It was at Rome," he writes in his autobiography, "on the 15th

ITALY.

THE CAPITOL, ROME.

October, 1764, as I sat musing amidst the ruins of the Capitol, whilst the bare-footed friars were singing vespers in the temple of Jupiter, that the idea of writing the decline and fall of the city first started to my mind." More than any other single place, this of the double approach to the Ara Cæli church and to the Capitol seems to sum up nearly all the phases of Rome's past greatness and supremacy.

Within two minutes' walk of the Capitol is another place that will remind us of another crisis in the history of Rome and of the world. The Mamertine prisons are close at hand, where tradition says that the apostles—Paul and Peter—were imprisoned, and where water miraculously issued forth from the rock to afford them the means of baptising their fellow prisoners. When Paul appealed as a Roman citizen to Cæsar, he was brought before Nero; and on the Palatine Hill may still be seen the fragments of the confessional and the judgment seat at which these two men, the one so famous and the other so infamous, met face to face as prisoner and judge.

Among the world-renowned visits to Rome two more should be mentioned, that of Charlemagne and that of Luther. Charlemagne was crowned Emperor of Rome and assumed the titles of Cæsar and Augustus on Christmas Day of the year 800, in the old Cathedral of St. Peter. The crowning of Charlemagne was in truth a revival of the Western Empire which had been extinct for more than 300 years. He was the first man of unmixed Teutonic blood who became Emperor of Rome. Mr. Bryce calls this coronation the "central event of the middle ages, one of those few events of which it may be said that if they had not happened the world's history would have been different."—*Holy Roman Empire.*

Luther's visit to Rome marks the beginning of the Reformation. He came to Rome to visit the fountain-head of the Christian faith: he came seeking help and guidance, and he found foulness and depravity. When Luther came to Rome, Roderigo Borgia was Pope; and modern opinion, Protestant and Catholic alike, has condemned the crimes wrought in his time under the shadow of St. Peter's. All visitors to Rome go to see the Santa Scala, the staircase brought from Jerusalem, which is supposed to have been trodden by Jesus Christ. Pilgrims ascend it on their knees for the purpose of gaining thereby an indulgence of a thousand years. Among the many who have knelt on these stairs was Martin Luther. "Patiently he crept half-way up the staircase, when he suddenly stood erect, lifted his face heavenward, and in another moment turned and walked slowly down again. He said that, as he was toiling up, a voice, as if from heaven, seemed to whisper to him the old, well-known words, which had been his battle-cry in so many victorious combats—'The just shall live by faith.'"—*Schonberg Cotta Chronicles.*

This sketch is far too brief to admit of even the bare mention of a tithe of the famous sights in and about Rome, therefore no attempt will be made to refer to those wonders of antiquity and art which every one visits, however short may be his stay in Rome. The attempt will here only be made to name a few places which the passing traveller might possibly miss unless they were specially recommended to him. Among the 300 churches of Rome, St. Clemente should on no account be left unvisited. The adjoining convent belongs to the Irish Dominicans, and a good-natured and learned father can sometimes be found to explain the wonders of the church to English travellers in their own tongue. St. Clemente is two churches, one above the other; the lower one is exceedingly curious from its mural paintings and the evidences that it was an early Christian basilica, founded on a Roman temple, dating from perhaps the republican period. The upper church is exceedingly beautiful and interesting; St. Clement was a fellow-labourer with St. Paul, and the church was founded on the site of Clement's paternal mansion. On one of the chapels are some lovely frescoes by Masaccio illustrating the lives of St. Clement and St. Catherine of Alexandria.

Let no one be so absorbed by Rome's buildings and statues as not to make time for drives, or, if possible, rides, in the Campagna. The views of the Alban Hills, the wild flower-covered country, the beautiful effects of light on the wide rolling landscape, the fragments of aqueducts, make a scene that will never be forgotten. These excursions are moreover at the moment a source of immense rest and refreshment to the traveller. Another restful way of spending an hour or two is by going with a book, or in perfect idleness (those who are endowed with the gift of loafing will prefer the latter) to the gardens of the Villa Medici half way up the Pincian Hill. The little wood in the upper part of the garden is full of delicious scents, wild cyclamen abounds in May; a beautiful view of Rome and the surrounding country can be had from the Belvedere on the highest point in the grounds. The villa and grounds now belong to the French Government and are the home of the French Academy. The porter admits visitors to the garden; a bell must be rung to summon him, and a small fee will insure a smiling welcome.

The environs of Rome are full of beauty and interest. Tivoli should certainly not be omitted even in a short visit, and Hadrian's villa may be taken on the way either going to or returning from Rome. Albano, Genzano, the lake of Nemi, and Frascati, can be included in one excursion from Rome. Good sleeping accommodation can be had at Albano, and the village inn at Nemi is quite tolerable. Murray sketches out a delightful four day's expedition among these places.

Sentimental tourists leaving Rome should not forget to drink from the fountain of Trevi, as these magical waters will insure the traveller's return to the Holy City. There are three railway routes between Rome and Florence. First, the Maremma route along the west coast by Civitia Vecchia and Pisa; second, by Orvieto and Assisi; third, by Spoleto and Perugia. There are so many places of beauty and interest on these last two lines, which are now joined by a new railway between Chiusi and Terentola, that visitors are most ill advised who rush from Rome to Florence without staying on the way to see the wonders that lie between them. Every one must judge for himself, according to the amount of time at his disposal, how long should be given to these enchanting mediæval towns, but to come away without seeing Perugia, Assisi, Siena, Cortona, Arezzo, and Orvieto, is to make one's Italian holiday very imperfect. These towns are really more characteristic than the larger ones. They have remained practically unaltered since the sixteenth century; the destroying hand of the "restorer" has scarcely touched them; they help one to realise much more perfectly than the modern capitals, such as Rome, Florence and Milan, what Italy was like in the days of Savonarola, Fra Angelico, and Leonardo. Orvieto is famed far and wide for its splendid Gothic cathedral; its gorgeous *façade* has reliefs by the Pisani, and in the interior are frescoes by Luca Signorelli and Fra Angelico. Except the cathedral, the town has no other attraction but its remarkable situation on a very steep rocky hill. Orvieto is a natural fortress, and its precipitous cliffs make one realise its suitability for the purpose it was often put to by the mediæval Popes, who used it as a place of refuge when they were driven out of Rome by the Colonna and Orsini fights. If time presses, Orvieto may be omitted, as the cathedral at Siena is in the same style and immeasurably more beautiful. In any case, a few hours at Orvieto will be sufficient.

On no account should Assisi and Perugia be left unvisited. They are places which, once seen, linger for ever in one's memory and love. Days at Assisi and Perugia stand out from among all other days of Italian journeying as full of absorbing interest and delight. Like Orvieto they are perched each on its hill top; but, unlike Orvieto, far more lovely surroundings, hills and mountains, lie about them; every street end has its vista of blue mountains and vine-clad slopes. No one ever saw Assisi and Perugia without enthusiasm; no one ever left them without affection and a longing to return. Assisi's great feature is the church and convent of St. Francis. How often does one not feel again in memory the awe which strikes one on first entering the lower church. Surely it is the most devotional church in Italy! The dim light, through which the gorgeous frescoes only gradually reveal themselves, the solemn music, the silent worshippers at the shrine of St. Francis, make a whole that is never forgotten. The walls of the vaulting near the high altar are covered with frescoes which Giotto painted with Dante standing at his side, both inspired by the love and enthusiasm which the memory of St. Francis created in all noble natures. No wonder that the church is supremely beautiful and solemn when three such souls as those of St. Francis, Dante, and Giotto presided over its making. The personality of St. Francis of Assisi is impressed upon Assisi, and is felt by every one who visits Assisi. Mr. Symonds, in his introduction to the *Study of Dante*, calls St. Francis and St. Dominic "undoubtedly the greatest men of their age." They were religious reformers of zeal so burning, of courage so high, of life so pure, that they have left their mark for all time to come upon Christianity. The most remarkable trait in St. Francis was his universality. His threefold order comprised all sorts and conditions of men and women. His heart was large enough for all. Even the birds and beasts had their friend in him, in an age when the sufferings of the lower animals were hardly at all regarded. From his tenderness to animals probably arose the traditional stories about his preaching to the birds and fishes. The three rules of his order were chastity, poverty, and obedience. He was twenty-six years old when he founded the order; at first only six others joined him, but his magnetic personal influence quickly began to make itself felt, and in a few years the order of St. Francis was the largest in Italy. An order for women followed, called the poor Clares, after their leader Santa Chiara; and later a third order for laymen was formed, called the Tertiaries or Brethren of Penitence: they retained their ordinary avocations in the world and wore no special dress. St. Francis made long missionary journeys to Illyria, Spain, and the East; pictures illustrating his life never fail to represent him preaching before the Sultan. Mrs. Oliphant's *Life of St. Francis* will be read with great pleasure either before or after a visit to Assisi. The great Franciscan monastery at Assisi is now converted into a boys' school. The buildings are interesting; the kitchen and refectory will remind English people of the kitchens and halls at Oxford and Cambridge. The view of the country from the arcades outside the monastery is most magnificent. Baedeker says three or four hours suffice for Assisi; I should like to spend a month there—so the traveller must judge for himself.

Perugia may be reached from Assisi either by rail or by road. There are some advantages in driving, for both places stand so high above the railway that the drive to and from the station is equal to about a third of the journey by road the whole way. The drive is, moreover, very charming, and on the way, not far from Perugia, a halt may be made to see the curious underground vault containing the tombs of the Volumnii. Among the recommendations of Perugia may be mentioned its very excellent hotel, the Albergo Brufani. The hotel is a model of cleanliness and comfort. The roads in Perugia are so steep that many of them are flights of stairs rather than streets; wheeled traffic is therefore impossible, except in the outskirts of the town. The street architecture is most picturesque and beautiful. The vegetable market, with its quaint archways, the Palazzo Pubblico or town hall, the Piazza, with its fountain by the Pisani, the other Piazza, with its statue of Pope Julius III., endeared to the readers of *Transformation* by Hawthorne's description, form a series of charming pictures. There is a very excellent gallery of paintings in Perugia, where native art can hold its own against all comers. Pietro Perugino, the master of Raphael, was a native of Perugia: and in Perugia the boy Raphael lived and worked with Perugino. There is a very interesting article on Perugia by Mr. Symonds in his sketches of Italy and Greece, suggesting how the imagination of the young Raphael may have been stimulated by the combats and feats of arms of the Baglioni family, the lords of Perugia. There are many traces of Raphael's handiwork in Perugia: the finest church, San Pietro de Casinensi, has lovely intarsiatura choir-stalls designed by him; his first fresco is also in Perugia; and he is said to have helped Perugino in his painting of the pride of Perugia, the Sala del Cambio, or exchange room. Nothing can give a better illustration of the difference between Italy of the fifteenth century and the modern world than this exquisite little chamber with the adjoining chapel. It was built about the year 1500 by the guild of the wool merchants; they wanted a place in which to meet for business purposes—an exchange—and they caused this little room to be built, and every inch of the walls and ceiling to be covered with the paintings and intarsiatura of the greatest artists of their time. Every turning in Perugia brings one to fresh beauties, every "coign of vantage" is a belvedere: among the many exquisite views towards the surrounding mountains two may be mentioned, that from the terrace outside the church of San Pietro de Casinensi, and that from the monastery of San Severo. No one misses the former on account of its proximity to the famous church; but the latter is seldom visited, and is, if possible, even more beautiful; the evening light is the best. Another of the beauties of Perugia, which is very often left unvisited, is the gateway of the building belonging to the fraternity of San Bernardino; it is called in Perugia "la Giustizia." The gateway is covered with the beautiful sculptured panels of child angels with musical instruments by Agostino della Robbia, one of the Florentine family of sculptors and potters.

On leaving Perugia for Cortona and Arezzo the lake of Trasimene is passed where the Romans were defeated by Hannibal 217 B.C. Cortona is a very ancient city of Etruscan origin, and may be looked upon almost as a museum of Etruscan antiquities. Cortona is beautifully situated on the spur of a mountain, and some of the views from it are splendid. That from the church and convent of Santa

Margherita is remarkably fine. Murray says that the view from the Hermitage of St. Egidio, four miles north of Cortona, is the finest in central Italy. Lucca Signorelli was a native of Cortona, and many of his works are here. Arezzo is another ancient Etruscan city. Its glory now centres in its magnificent Italian Gothic cathedral, the painted windows of which are so celebrated. Arezzo was the birthplace of Petrarch, Vasari, Margheritone, Spinello Aretino, and many other celebrated men. Michael Angelo was born at Caprese, close by. The Florentine historian, Villani, thought there must be something in the air of Arezzo peculiarly favourable to the production of genius.

The country about Siena is beautiful, but not quite so beautiful as that around Assisi and Perugia; as one approaches by railway one is struck by the brown, volcanic-looking earth, riven in long cracks; the town stands high (1,330 feet above the sea) but the ascent is gradual, and the railway station is on about the same level as the town. The air is bracing and fresh, and the hotel and pension accommodation is good. Siena is noted for the purity of its Italian. Those who wish to make a pause for the sake of studying the language could not choose a place in every way more suitable and agreeable than Siena. But, with all its antiquity, it does not belong to the past so entirely as Perugia and Assisi, being a thriving modern town as well as a picturesque ancient one. The cathedral at Siena is most magnificent: Italian Gothic at its best and richest. The Bible story pictures of the pavement, the long row of the sculptured portraits of the Popes above the arches of the nave, the library with Pinturicchio's pictures of the life of the Sienese Pope Pius II. (Æneas Sylvius Piccolomini), and the splendid collection of illuminated choir books are among the special items of attraction in this cathedral; but the glory of the cathedral is not in the least eclipsed by the splendour of its details, it is the noble church itself that fascinates the beholder and not its furniture and trappings, harmonious though these may be. It is to be regretted that the *façade* has been defaced by some glaring modern mosaics, whose crude colouring mars the rich tones of the surrounding marbles. Siena has suffered in other ways from the hand of the restorer; the celebrated Fonte Gaja, the sculptured fountain of the great Piazza, has been taken to pieces, and the fragments stowed in a museum: a copy of what a modern sculptor thought the original was like when it was new is now in the place of Quercia's fountain. No one should miss the very interesting frescoes of the Palazzo Pubblico. The picture gallery at Siena contains many beautiful examples of the early Sienese school. The admirers of Sodoma will also find here a selection of his pictures, among them his masterpiece, the terribly realistic *Christ Scourged*.

St. Catherine is almost as great and as pervading a personality at Siena as is

St. Francis at Assisi. Her father's house, now converted into an oratory, is otherwise practically unchanged since Catherine lived in it. Her father, Giacomo Benincasca, was a dyer, and the street where the house stands is still the street of the dyers. Catherine became a Dominican nun at the age of eight, and died at the age of thirty-three. Her spirituality, her deeds of devotion to the sick, her ministrations to condemned criminals, and the powerful political influence she exerted (at last successfully) to induce the return of the Popes from Avignon to Rome, have kept her name in perpetual remembrance, especially in her native city. A very interesting life of St. Catherine has been written by Mrs. J. E. Butler. Those travellers will be fortunate whom fate leads to Siena on the day of the festa of St. Catherine (April 30). The whole city wears an air of holiday and rejoicing. Country people in their wide Tuscan hats flock in crowds to the cathedral; there they walk about in tranquil enjoyment, admiring the blaze of lights on the high altar, and apparently requiring no other edification to complete their sense that everything fitting has been done that is due to the honour of their beloved saint. There is a very interesting contemporary portrait of St. Catherine in a chapel adjoining the church of St. Domenico.

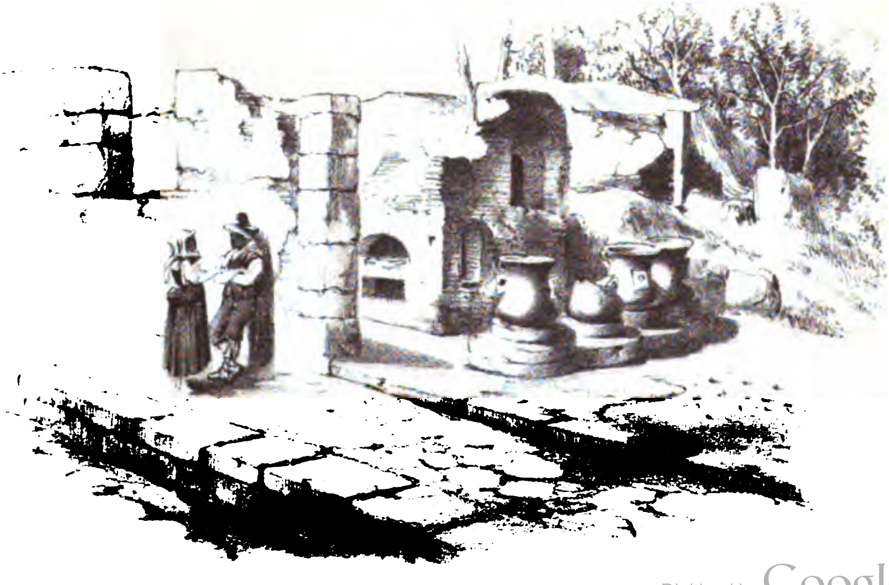
Many charming excursions may be made from Siena. St. Gemignano, famous for its mediæval towers, and for its frescoes by Benozzo Gozzoli, can be reached without much difficulty. It is a pleasant drive for the afternoon to go to the Franciscan monastery L'Osservanza, or to the castle of Belcaro; and a delightful day may be spent in visiting the Benedictine monastery at Monte Oliveto.

Pisa may either be seen in a long day on the way from Siena to Florence or a special excursion can be made for the day from Florence. The inns at Pisa are not attractive, but they are quite endurable to those who wish for a longer visit to the town than one day. The great sights of Pisa are among those with which every one is familiar from childhood. The leaning tower, the baptistery, and cathedral have been shown to us in models, pictures, and photographs, till we can scarcely realise when we really see them for the first time that we have not seen them a hundred times before. They are not for this reason the least disappointing; but one greets them with the feeling of recognition, not of surprise. The views on a fine day from the leaning tower are exquisitely beautiful; on the one side are the mountains, "Perche i Pisan veder Lucca non ponno;" on the other, is the sea with its islands, Elba reminding us of England's fight with Napoleon, Georgona and Capraia reminding us of Dante's invocation that they should come and hedge in the mouth of the Arno, so that wicked Pisa might be smothered in the waters. Pisa was Shelley's home for nearly a year towards the end of his life; much of his best poetry was written here, among other things the *Ode to a Skylark*, and *Adonais*, the elegy on the death of Keats. Quite the most wonderful and beautiful of the sights of Pisa are the frescoes in the Campo Santo. They will well repay long and careful study. Although some of the frescoes are sadly damaged, enough remain to be of the deepest interest. Those which have been attributed to Orcagna, *The Triumph of Death*, &c., may almost be called Shakesperian in their many-sidedness, their truth to life, their imaginativeness and humour.

If the leaning tower at Pisa strikes the traveller as a long familiar friend, the same thing cannot be said of Giotto's campanile at Florence, which Mr. Ruskin has called by the happy name of "The Shepherd's Tower." However familiar one may be with pictures and photographs of the Shepherd's Tower, the first sight of it takes one's breath away, so immeasurably does it surpass in exquisite gem-like beauty all representations of it. Loaded as it is with marvellously delicate and beautiful detail, the detail does not obtrude itself, the mastery of the artist over his art is so perfect that the first thought that rises in the mind on seeing it, is not—what beautiful carvings, what elegant tracery, or what a clever architect; but, how gloriously beautiful, what a perfect tower! Close at hand is the baptistery, which Dante calls "mio bel San Giovanni," where stood the font in which he once saved a child from drowning. The interior of the baptistery is gorgeously solemn with rich mosaics; the exterior boasts the famous bronze doors of Ghiberti and the porphyry pillars taken from the Pisans, who, according to tradition, spoiled them with fire before yielding them over to their ancient foes at Florence.

The baptistery is probably on the site of an ancient temple of Mars, who was in pagan times the favourite god of the Florentines. The *façade* of the cathedral was left unfinished till the year 1872, when the work of completing it was commenced. Memories of the great citizens of Florence and of Italy throng upon one in the neighbourhood of the cathedral group of buildings. Dante's loving reference has already been quoted; Giotto has contributed its most lovely feature; Donatello and Della Robbia designed for it their most beautiful sculptures; Michael Angelo took Brunelleschi's dome at Florence for his model when he was designing St. Peter's at Rome; Savonarola preached in those aisles; in the sacristy Lorenzo dei Medici took refuge, on the Easter Sunday, 1478, from the Pazzi conspirators who had just murdered his brother Giuliano; Machiavelli must often have trodden that pavement; Galileo lived close by on the pleasant hills to the south. But it is impossible to enumerate more than a tithe of the great men to whom Florence has been either their native

FLORENCE



BAKER'S SHOP WITH GRINDING MILLS, POMPEII.

place or their chosen home. She seems to have produced or to have attracted to herself for two hundred years all that was noblest and greatest in Italy. Like Rome, the sights of Florence are so numerous and so famous that it is not necessary to attempt to catalogue them here. No one, however brief his stay, should miss the cathedral buildings, the Palazzo Pubblico, San Marco, and the Bargello; the three great galleries, *i.e.* the Uffizi, the Pitti, and the Accademia delle Belle Arti: and Mr. Ruskin's little books, previously referred to, are invaluable. No one who possesses them will miss Santa Croce or the Spanish Chapel at Santa Maria Novella. What might possibly be overlooked in a short visit shall be very briefly mentioned here:—

(1st) The chapel in the Riccardi Palace, now the principal municipal building of Florence, formerly the palace of the Medici. The chapel is covered with most exquisitely lovely frescoes by Benozzo Gozzoli; they represent the journey of the Magi, and, in addition to their intrinsic interest from their beauty, they will also be interesting as containing portraits of the most famous of the Medici family.

(2nd) The Masaccio chapel in the church of the Carmine, south of the Arno. Who that has taken time to look long at it can ever forget the face of the angel who is taking St. Peter out of prison?

(3rd) The convent of Santa Maddalena dei Pazzi, where the chapter-house contains perhaps the finest Perugino in the world. A note should be made that this can only be seen on Sundays, Mondays and Fridays, from 12 to 3. A few years ago it was not shown at all. There is, therefore, no mention of it in some guide books.

Every one will probably visit, among the beautiful outskirts of Florence, the ancient city of Fiesole, San Miniato, and Bello Sguardo. None of these should be omitted; they are most beautiful and very accessible; but following the plan previously adopted of recommending places which might otherwise possibly be overlooked, it may be pointed out (4th) that a delicious afternoon, with books or newspapers from home, can be spent among the cypresses on Monte Oliveto. It is a little hill, garlanded with vines and crowned with cypresses, just outside the Frediano gate on the west side of Florence. It commands lovely views of Florence and her surrounding mountains. (5th) The Torre di Gallo is a place no one should miss; the beauty of the views from it is most memorable. Here Galileo lived and worked for many years, and many interesting mementoes of him are preserved. The tower and the house attached belong to a private family who most kindly allow travellers to visit the place. The Torre di Gallo is not very far from San Miniato and Bello Sguardo; on the same side of Florence, but rather more distant, is (6th) the Certosa (Carthusian Monastery) of the Val d'Ema. It is only three miles from the Porta Romana of Florence; no one should leave Florence without visiting this charming place. A fine day is indispensable for enjoying the lovely views. The rule of the Carthusian Order gives every monk a tiny house to himself, a room to live and eat in, a room to sleep in, and a garden. The building is so arranged that he need not necessarily ever speak to a human being; it does not sound a very attractive life, but the rooms and the views from the little balconies and the dainty garden full of sweet scents and colours make one wish (for five or ten minutes) to be a Carthusian monk. There are some very lovely sepulchral monuments, by Donatello, in a chapel here, dedicated to the Acciajuoli family, by one of whom the Certosa was built. The few monks who still remain make excellent Chartreuse, which may be bought here. (7th) A visit, varying according to the time at the traveller's disposal, from one to three or four days, to Vallombrosa, is a most attractive excursion.

Bologna has little that strikes one as particularly attractive after the treasures of Florence. The picture gallery, with the exception of some fine Francias, is dreadfully dreary with its acres of pictures by Guido at his worst, the Caracci and their school. Even the famous St. Cecilia, by Raphael, which is here, is disappointing and fails to touch. The town itself, however, is very picturesque and pleasant, its long arcades affording welcome shelter whether in sunshine or rain. The university has been alluded to in a previous page. Visitors are very courteously conducted over the University buildings by the officials in charge. The two leaning towers, Asinelli and Sarisenda, are very striking and picturesque.

Bologna is the most convenient starting-place for a visit to Ravenna, which for nearly 400 years was the seat of government in Italy. The great attractions of Ravenna are its marvellous early Christian mosaics. The readers of *Italy and her Invaders* will have a special delight in a visit to Ravenna and its mementoes of the Empress Placidia and of Theodoric, king of the Visigoths and exarch of Italy. Ravenna is the place where Dante died; one of his favourite haunts was the splendid pine forest, which a few years ago stretched for miles along the sea coast. The forest was, unfortunately, almost destroyed by the exceptionally severe winters of 1879-80 and 1880-81.

If Venice is the next goal which the traveller has in view, he will probably return by rail to Bologna, and between that place and Venice he should remember that he will pass Ferrara and Padua, and he should, if possible, stop at each. Ferrara is much less important and beautiful than Padua, but it is certainly worth a passing visit. It was the scene of the great tragedy of Tasso's life.

Ariosto also lived here, an inmate of the court of the Este family. Here Savonarola was born 1452, and here the infamous Lucrezia Borgia died. Modern writers affirm that like Becky Sharp she became a highly respectable member of society towards the end of her life, dividing her time between sewing and devotion.

Among the smaller towns, Padua is one of the most charming places in Italy; no one should omit to visit it, or let it be thrown into the shade by the superiority of its great neighbour Venice. The deliciously picturesque fruit and vegetable markets will be ever remembered with affection. Among Padua's art treasures are two that are second to none of their kind in the world, Giotto's frescoes covering the whole of the Arena chapel, and Donatello's bronze reliefs on the high altar, and on the altar of the Holy Sacrament in the famous church of St. Antonio. These latter are matchlessly beautiful. The light is wretched; even on a bright day a taper is indispensable, and it is necessary to go on one's hands and knees to get on the right level for seeing these reliefs. But all trouble and fatigue are amply rewarded by their loveliness, which gradually penetrates through the gloom.

Venice is more exactly what is expected of it than any place in Italy. From the first there is no disappointment. On arriving at the railway station, the traveller and his goods and chattels are put into a gondola, and in four or five minutes they are on the Grand Canal. The swiftly, silently moving gondolas, the cries of the gondoliers, the stately palaces, the shining white light on the water, realise everything that had been anticipated. Venice should be visited before the end of May, or after the middle of August, on account of the mosquitoes, which in the height of summer are very troublesome; the smells from the canals too are very offensive when the hot weather has fairly begun. Mr. Ruskin's *Stones of Venice* should, if possible, be in the traveller's hands here, and in any case his charming little guide books, previously referred to, should be obtained. They will not only add immensely to the pleasure of their readers, but will also be sure to make him see many things which he would otherwise miss. Hare and Murray for common sense, and Mr. Ruskin for uncommon sense, will be the best guides here. The glories of St. Mark's are a never ending source of delight in Venice. The curiously undulating pavement has a fanciful appropriateness in the cathedral of the "Queen of the Sea." The Piazza at Venice, with St. Mark's, the ducal palace, the great clock tower, and the myriad of wheeling, whirling, and walking pigeons make a marvellously beautiful picture for those who have once seen them. Venice is a very restful place, from its quietude and from the enforced repose of gondola travelling.

Those who are very energetic in the way of walking exercise will, therefore, probably prefer to take Venice after having undergone a good deal of fatigue in other places.

On leaving Venice by rail towards Milan, Padua will again be passed, and the opportunity will perhaps be seized of seeing the Donatellos at St. Antonio again. Vicenza is the next considerable place on the road. A halt should be made here for the sake of seeing the town, which is very pleasantly situated and contains very magnificent examples of the architecture of Palladio. The gateways and balconies of Vicenza abound in very beautiful wrought iron work. There is not much that is good (judged by the Italian standard of excellence) in the picture gallery there.

A longer stay should be made at Verona, a truly delightful town, which can be made the head-quarters for visiting Mantua and Cremona before proceeding to Brescia, where another halt should be made. Verona is at the Italian end of the Brenner railway, leading by Innsbruck to Munich. Those who are going to Germany will find this a very agreeable route; or if they prefer going on to Milan, they will there be able to go by the St. Gothard Railway to Lucerne, and thence by Basle northwards. The noblest work of art in Brescia is a Greek statue in bronze, a Victory. The town is also rich in good churches and pictures. It is a considerable seat of metal manufactures, and a good place for buying artistically-fashioned copper pots and pans. Bergamo is almost as charmingly situated as Perugia and Assisi. The municipal buildings are very fine, and the gorgeous Coleone chapel deserves a visit. There is no hotel accommodation in the upper town that looks at all attractive, and the traveller will probably prefer seeing the sights of Bergamo without spending a night there, especially as Milan is within easy reach.

Milan is almost as worthy of a prolonged visit as her sister cities, Venice and Florence. As the ancient Mediolanum, Milan was the capital of the prefecture of Italy under the fourfold division of the empire by Diocletian. It was at Milan (390 A.D.) that her great Bishop Ambrose closed the gates of the church of Sant' Ambrogio against the Emperor Theodosius, in consequence of the latter having ordered, in a fit of fury, an indiscriminate massacre at Thessalonica in punishment of a popular outbreak; for eight months the bishop refused to receive the Emperor or his Ambassadors; and forgiveness was finally offered on the condition that a law should be passed to the effect that thirty days should henceforth elapse between the passing of a capital sentence and its execution. It is creditable to Theodosius that he appreciated the courage of the bishop; he is reported to have said "Ambrose is the only man worthy of the name of Bishop." The church of Sant' Ambrogio is one of the most interesting in Italy. The Atrium, or cloistered court, beyond which, in early Christian times, the catechumens were not allowed to pass, will remind the visitor of the atrium of St. Clemente in Rome. Milan has been desolated by sieges and almost swept off the face of the earth so many times that the wonder is that it still contains so many monuments of antiquity. It is Mr. Freeman, I think, who speaks of Milan as "rising again from her deathless ashes"; and it is certain that there is about Milan a strange charm of vitality and vigour. Leonardo's famous fresco of the Last Supper is at Milan. It is advisable to see it early in the morning, and, if possible, alone. Its beauty and power are very marvellous, but it has suffered so cruelly from decay and restoration, that unless it is seen under the most favourable circumstances, it keeps it secret to itself. The glory of Milan in the way of pictures lies in the magnificent Luinis. No one knows what Luini is who has not been to Milan. There, he is greater than his master, Leonardo himself, more human, and even more ineffably lovely. There are many splendid Luinis in the Brera, the Milan picture gallery, which also contains Raphael's beautiful *Marriage of Mary and Joseph*. The church of San Maurizio is covered by the most superb frescoes by Luini. No one at Milan should miss seeing the hospital of red brick and terra cotta, built by Francesco Sforza and his duchess in 1456.

Milan is the centre of a number of interesting places and excursions; Monza, where the iron crown of Lombardy is preserved, is almost a suburb of Milan. Como and the Italian lakes are easily reached, as are also Monte Generoso, commanding one of the matchless views of the Italian Alps, and Lugano, where the lover of Luini will find beautiful examples of the master. Pavia is an easy day's excursion from Milan. Another day should be given to seeing Gian Galeazzo Visconti's famous Certosa; it is wonderfully gorgeous, but worldly, and cold; it looks its history:—the expiation offered by a sin-laden wretch for his crimes. Galeazzo's "false heart's history" is written on his splendid monastery.

Not the least of the charms of Milan is the view it commands of the Alps. Those who choose a fine day, or, better still, a fine cloudless evening for going to the top of the cathedral, will be rewarded by seeing the Alpine range, from Mont Blanc to Monte Rosa, and further still to the eastward, bathed in rosy light. At Lucca, an enthusiastic sightseer once asked Mr. Ruskin, "What is the finest thing to see in Lucca?" The answer was:—"Oh, the clouds, you know." One remembers this reply without feeling anything about it except its absolute, simple truth when one sees such a sight as the Alps from Turin or Milan.

It may be said without very great exaggeration, that in Turin the clouds and the mountains are not merely the things best worth seeing, but the only things worth seeing. There are, however, a few good pictures in the galleries, and some very fine illuminated manuscripts in the university library. Travellers who have passed through Egypt will enjoy the museum. The Superga, a hill near Turin, the burial-place of the royal house of Savoy, commands a magnificent view of the mountains. Those who are going hence northwards will probably take the Mont Cenis railway, which will bring them to Paris in twenty-two hours after leaving Turin. Those who prefer to linger longer in the south may go to Genoa and thence skirt the Mediterranean to Marseilles, passing San Remo, Mentone, Monaco, Cannes, and Nice.

Genoa.—Picturesque bustling Genoa, where every other house is a palace, holds its own with its majestic neighbours, the maritime Alps and the Mediterranean. There are no very great art treasures here, except some portraits by Vandyke, whose greatest works, however, are to be seen in England. Genoa's "face is its fortune." Magnificent views can be had from the heights immediately above Genoa, of the town, the harbour, and the sea. An interest attaches to Genoa as having been at one time the great maritime rival of Venice; its trade is now very considerable, and is increasing. The greatest citizen of Genoa was Christopher Columbus (1435-1506). The greatest family of Genoa was that of the Dorias, whose greatest member was the Admiral Andrea Doria (1466-1560) who won the name of Father and Liberator of his country. He freed Genoa from the dominion of France, without allowing it to fall into the power of the Empire under Charles V.; and having accomplished this task, he disclaimed the vulgar ambition of personal pre-eminence, and advised his countrymen to choose the government they thought best. They decided, with his approval, on the Republican form of Government, and, with little alteration, the constitution then framed lasted till 1815. It will be remembered that the Venetian, Marco Polo, wrote his famous book of travels while he was a prisoner at Genoa.

He who leaves Genoa, by the Riviera, for Marseilles, will say farewell to the "sacred soil of Italy," between Ventimiglia and Mentone. His road henceforth lies through France, which seized the two provinces of Nice and Savoy as the price of her help to the Italian people to throw off the Austrian tyranny. Henceforth, the officials will be French, and official announcements will be made in the French language; Mentone will be called *Menton*, and Villafranca, *Villefranche*. But the people and their language are Italian still. "The voice is Jacob's voice, but the hands are the hands of Esau."

CHAPTER VIII.

GERMANY.

NUREMBERG.—INNSBRUCK.—MUNICH.—THE PINAKOTHEK.—THE GLYPTOTHEK.—BAYREUTH.—WAGNER'S "PARSIFAL."—DRESDEN.—BERLIN.—CHARLOTTENBERG.—QUEEN LOUISA.—COLOGNE.—ITS EARLY PAINTERS.—THE ST. GOTHARD RAILWAY.

THE following notes on German travel are contributed by Mrs. Henry Fawcett:—

Those who are choosing between the Brenner and the St. Gothard railway routes to Germany should remember that the Brenner railway goes over the Alps and the St. Gothard railway tunnels through them. Travellers by the Brenner from Verona will do well to vary their journey by making a tour in the Tyrol from Innsbruck before proceeding to Munich. The church at Innsbruck contains a whole congregation of quaint mediæval figures sculptured in gilded bronze. The views and excursions from the town are very lovely. Munich is a town of little beauty in itself but it possesses great artistic attractions: the picture gallery and the sculpture gallery are among the best in Europe, and the opera company ranks among the best in the world. Its conductor is generally selected to conduct the performances given from time to time at the Wagner Festival at Bayreuth. The picture gallery and sculpture gallery, spoken of locally as the "Old Pinakothek" and the "Glyptothek," are the resort of the students of art and archæology from all parts of the world, and possess unrivalled attractions, not only from the value of their contents, but from the very instructive way in which they are arranged. The sculpture gallery in particular, affords in itself, from skilful and judicious arrangement, a complete history of the art of sculpture from the earliest times throughout the greatest period of Greek art. The sculptures brought in 1811 from the Temple of Athene at Ægina, are of special interest in the history of art. So also is the statue of Eirene, with the infant Plutos in her arms, supposed to be by Cephisodotos, the father of Praxiteles; this is one of the three known Greek statues representing a man or woman carrying a child. In this, the earliest of the three, little or no beauty of modelling is bestowed upon the child, all the care and skill of the sculpture is reserved for the fully-formed adult human figure. It has been observed that the Greeks appeared very insensible to any beauty in immature or imperfect things. Their most beautiful statues represent men or women in the prime of fully developed physical beauty: childhood is seldom, and old age never, represented by them. In his statue at Munich, and also in the Hermes carrying the young Dionysus, by Praxiteles, the child represented is hardly more than a stump or a wooden doll, strangely imperfect according to our conception of the beauty of childhood, in comparison with the exquisite beauty of the adult figure. In the latest of the three statues referred to, a satyr with the infant Dionysus, of the Grœco-Roman period, the child's form is modelled with as much care and skill as is bestowed on the adult figure. The three can be compared, either in the original or in casts, at the Munich Museum; and it will be felt that notwithstanding the greater manual skill of the later work, it is deficient in those qualities of dignity and nobility which make the two earlier statues so impressive.

The old Pinakothek at Munich contains among other priceless pictures, a fine "Nativity" by Albert Durer, with portraits on either side of the brothers Stephen and Lucas Baumgartner; portraits by the same artist of himself, his father, and of his master in the art of painting—Wohlgemuth; a very beautiful "Madonna in Adoration" by Francia, the rose trellis and the little birds in the branches are very lovely; some beautiful Hans Memlings, especially the "Adoration of the Magi"; the same subject by Roger van der Weyden, and "St. Luke painting the Virgin." There are also some very lovely Raphaels, Holy Families and Madonnas of exquisite purity and tenderness.

No account, however brief, of the great picture galleries of central Europe should omit the Belvedere at Vienna. The best pictures here are of the Venetian School, the gallery being particularly rich in pictures by Titian, Palma Vecchio, Paul Veronese, etc.

Purely German art and old German life and manners will be better studied at Nuremburg than in almost any other town in Germany. As the birthplace and home of Albert Durer, several of his best works are preserved here. The town itself is better than anything it contains, it is like a bit of the middle ages; one expects to see from those quaint gabled houses the portly form of a stalwart Nuremburg meistersinger issue forth. Longfellow, in his poetical description of Nuremberg, says:—

"In the valley of the Pegnitz, where, across broad meadow-lands,
Rise the blue Franconian mountains, Nuremberg the ancient stands,—
Quaint old town of toil and traffic, quaint old town of art and song,
Memories haunt thy pointed gables, like the rooks that round them throng,
Memories of the middle ages, when the emperors, rough and bold,
Had their dwelling in thy castle, time-defying, centuries old;
And thy brave and thrifty burghers boasted in their uncouth rhyme
That their great imperial city stretched its hand through every clime."

Bayreuth is within an easy railway journey from Nuremberg. The little town has become famous as the birthplace and home of Richard Wagner, the celebrated composer. Here, the late King Ludwig of Bavaria, who committed suicide in 1886, built Wagner a house and a theatre. In the latter is held at irregular intervals the famous Wagner festival, the principal feature of which is the performance of the sacred drama "Parsifal." This can be performed at no other place than Bayreuth; therefore, when the festival takes place, admirers of Wagner, flock from all parts of Europe to hear it. The performers are chosen from among the best singers and actors from every operatic company in Germany. Berlin, Dresden, Munich, Frankfort, Hamburg and Vienna all contribute their leading musicians, many of whom show their enthusiasm for the composer by giving their services gratuitously. No pains are spared, either through splendid scenic effects or frequent rehearsals, under the direction of skilled critics and managers, to make the performances reach as near as possible to absolute perfection. The festival generally lasts for about a month, and takes place at the end of July and beginning of August. Two plays are performed, of which "Parsifal" is always one, and there are two performances of each play during each week. A mistaken notion prevails that "Parsifal" is an extraordinarily lengthy performance. It does not, as a matter of fact, exceed in length many other operas. It was one of Wagner's principles that no one should attempt to listen to music with a weary exhausted brain; and he believed that most people could not listen with close attention for more than two hours at a stretch. Therefore, though the whole length of "Parsifal" is four hours, the performance is spread over at least six; there is a break of an hour between the first and second and the second and third acts. During these intervals the whole audience leave the theatre; the arrangements for exit and entrance are so perfect that this is easily accomplished in a few minutes; the result is that the air of the theatre is thoroughly changed and purified; those who wish to do so can take tea or dinner in the well-managed restaurants close at hand, or walk up and down on the terrace or in the woods that surround the theatre, watching the sunset glow on the sweet landscape of the Bavarian hills. Anything more unlike the ordinary surroundings of a theatre can hardly be imagined. The summons to return to the theatre is given by a group of trumpeters who sound the notes of the leading "motif" of the coming act. The audience return leisurely and resume their places without pushing or any kind of confusion; as soon as every one is seated, all the lights in the house are extinguished, except those that illuminate the stage, and the play begins again. No one is allowed to enter after the act has begun, and no one is allowed to leave except on account of illness. The faintness and fatigue so common in other theatres are, however, very exceptional here, because the air is pure and everyone in the audience is afforded opportunities of rest and refreshment in the open air. The extinction of the lights in the auditorium of the theatre has many advantages; it concentrates attention on the stage, and it eliminates from the audience those who go, not because they wish to hear and see the play, but because they wish to be seen themselves. The painted, over-dressed women whose object it apparently is to attract as much attention to themselves as possible, and who frequently talk, even at concerts, all through the performance, are conspicuous by their absence at Bayreuth. Their smartness and their jewels would not be seen in the blessed darkness there, and the least attempt at chattering and fussing about would be promptly suppressed by the benevolent despotism that rules the place. The whole result of the way in which the performances are arranged and controlled is ideally perfect; the absence of everything that is noisy, irritating, vulgar, and disturbing prepares the mind to receive the full impression which the play is capable of producing. "Parsifal" is like nothing else that has ever been put upon the stage. It is full of the most solemn religious feeling; it is the story of the redemption of sinful men and women by perfect purity and perfect self-sacrifice; in a word, it is the story of the gospel, transposed or translated, as it were, into modern life. No one who has seen it can wonder that Wagner while he lived, and his family since his death, should forbid the representation of the play in any place where they cannot control it, and insist that all the conditions of its performance should be harmonious with its lofty religious spirit. One jarring note of vulgarity or coarseness would change what is now a sacred drama, into a sacrilege.

Dresden, like Munich, is a town that depends for its attractiveness on the art treasures it contains, and on its first-rate opera company. It is a favourite place for English people to spend some months; there are good schools for boys and girls where German can be acquired as well as an excellent ordinary education. The picture gallery is one of very great renown. Two of its masterpieces have a world-wide celebrity, the "Madonna di San Sisto" by Raphael, and the "Madonna with the Sick Child" by Holbein, generally called the Meyer family Madonna, on account of the name of the Burgomaster for whom the picture was painted, and whose sick child is in the Virgin's arms. The gallery would be worth travelling many hundred miles to see, for these two pictures only. There are, however, a large number of other very beautiful and interesting pictures; among them should be especially mentioned an exquisite Madonna with Saints, a triptych, by Jan Van Eyck—this was used by the Emperor Charles V. as his travelling shrine—a small Crucifixion, by Albert Durer, and a very lovely Leonardo da Vinci (No. 30), a Madonna with St. John. Very pleasant excursions, for the day only or for a longer period, can be made from Dresden to a rocky region which is dignified by the name of Saxon Switzerland. The distance from Dresden to the edge of this picturesque bit of country is only about eight miles, and many of the finest scenes are within an easy walk of the railway. It can also be reached by the steamers which ply up and down the Elbe.

The Berlin galleries are distinguished, like most others where the German scientific spirit has had free play, by very careful and judicious arrangement. The sculpture gallery is hardly so rich in beautiful originals as the glyptothek at Munich. The Germans have lately quite taken the lead in the study of classical archæology, and their Government has been very liberal in supplying funds for carrying out excavations at Olympia and elsewhere, where famous temples of antiquity are known to have existed; but with rare self denial they have not carried away the art treasures they have discovered. The originals are all left in the country which produced them, and on the scenes which they were made to adorn. Casts have, however, been taken which are placed in the Berlin museum, and may be obtained by other museums of sculpture all over Europe. There is at least one very beautiful original statue at Berlin, a bronze, found in the bed of the Tiber, of a boy praying. The picture gallery has one very beautiful Raphael, several portraits by Botticelli and Ghirlandaio, and a very splendid Holbein, a portrait of George Gyzen. Parts of the celebrated picture at Ghent, by the brothers Van Eyck, the "Worship of the Lamb," are in the Berlin gallery, and should be carefully studied, so that when the great picture itself is visited, memory and imagination may replace the inferior copies with which it has been attempted to fill the gaps left by the removal of these portions of the picture. The town of Berlin has very little in it besides its art collections to attract visitors; the surrounding country is extremely flat and uninteresting. Admirers of Frederick the Great will feel an interest in visiting Potsdam, where his writing table, chair, and camp bedstead are preserved. An excursion should also be made to Charlottenburg, easily reached by tramway from the Brandenburg Gate, where, in a chapel in the grounds, is a very beautiful recumbent statue in memory of the much beloved Queen Louisa of Prussia, the mother of the late Emperor William. No one can stay in any part of Prussia without being reminded of the love and veneration inspired by this good Queen. She died in 1810, but her memory is green in the hearts of the Prussian people. In 1806, at the time when Prussia suffered the most cruel reverses and humiliation at the hands of Napoleon, the conqueror attributed to the influence of Queen Louisa, the energy which the King of Prussia had shown in declaring war. M. Lanfrey, in his history of Napoleon, says that Napoleon regarded her as he would have done a bastion which he wished for military reasons to destroy, simply as an obstacle to be annihilated, no matter by what means. "He attacked her with the only arms he could employ against her—ridicule, abuse, and calumny. There was not a bulletin in which he did not recur to this favourite subject, and we might fill a volume with all that he wrote against her." *Lanfrey*, vol. 2, p. 598. He impugned her honour as a woman, and tried to bring down the hatred of her people upon her by representing that she was the cause of the war which had brought upon them such great suffering. In October, 1806, Napoleon entered Berlin as a conqueror, and four years later, Queen Louisa died of a broken heart. If Napoleon could have looked sixty or seventy years ahead, he would have seen the memory of that insulted and calumniated patriot queen cherished by the whole German people as the symbol of their best national aspirations, and he would have seen her son, the most powerful monarch in Europe, and the avenger at Versailles, in 1871, of the insults suffered by his mother and his country in 1806.

There are collections of pictures well deserving a visit at Brussels, Bruges, Antwerp, The Hague, Haarlem, Amsterdam, and Cologne. Ghent should certainly be visited by anyone journeying by Brussels, Bruges, and Ostend, for the sake of the wonderful Van Eyck, "The Worship of the Lamb," previously referred to. The Hans Memlings in the Hospital of St. John, are the principal treasures at Bruges, although there is also a very excellent academy of ancient paintings there: the Hague recalls "Paul Potter's Bull": Haarlem, the splendid collection of portraits by Franz Hals: Amsterdam, the matchless portrait by Rembrandt of "the Burgomaster Six," still in the possession, and in the house of his descendants: Brussels is particularly rich in specimens of early Flemish and German art: Antwerp has a very beautiful Van Eyck, "St. Barbara, with her Tower," besides three other paintings by the same master, and a considerable number of very beautiful early Flemish pictures. The Cologne Gallery is one of the most interesting and least known in Germany; hundreds of tourists go and come, and see the cathedral, and buy eau de cologne in the Julich's Platz, and never so much as know of the existence of the gallery. Yet this collection is the only place probably which brings together so many lovely examples of the art of the founders and creators of the German School of Painting—Meister

ITALY.

LAGO MAGGIORE.

LAGO MAGGIORE.

LAGO DI COMO.

Wilhelm of Cologne, Meister Stephan, and several others whose names have not survived, but whose memory has been handed down in connection with the pictures they painted, or the place in which they lived, such as the "Master of the Lyversberg Passion," and the "Master of Liesborn." One of the most exquisite little pictures in the world is the "Madonna in the Rose Arbour," by Meister Stephan, in the Cologne Museum; for lovely gem-like colour and tender human feeling this picture stands unrivalled, or, at least, unsurpassed. Meister Wilhelm was the forerunner and teacher of Meister Stephan, just as Cimabue was the forerunner and teacher of Giotto. The fame of the master is to a great extent founded on the achievements of the pupil. The Dombild, or cathedral picture, in the cathedral at Cologne, is another very beautiful work by Meister Stephan, and another is to be found in the Archbishop's Museum, in the same place. The early masters of the Cologne school impress their work with a peculiar sweetness, innocence and näiveté; their pictures would delight children, they are so full of story, and so laden with carefully-finished detail, and so brilliant with lovely colour. Jewels, diadems, flowers, birds and embroidered robes, are all introduced from the mere child-like delight in pretty things; but they never obscure the real meaning and subject of the picture. There are a few pictures of the early Cologne school in the London National Gallery; but they are not to be compared for beauty and interest with those in Cologne. Those who feel the charm and attraction of these pictures are recommended to read "Early Flemish Artists and their Predecessors on the Lower Rhine," by Mr. W. M. Conway, and the "Illustrated Handbook of Art, German, Flemish and Dutch Painting," edited by E. J. Poynter, R.A.

Travellers bound for England or Germany who find themselves in or near Milan will naturally take the St. Gothard route northwards. The railway from Milan gradually ascends, passing Lugano, Como, and the lovely Italian lakes; the changes in the vegetation are very striking as the journey proceeds, the land of the vine and olive, of sunshine and flowers, is gradually left behind; vegetation becomes less and less luxuriant and happy looking, soon nothing green is to be seen but the hardy fir trees of the Alps, and even these cannot live when one has mounted a little higher, and one enters a region of ice-bound rock, savage overhanging precipices, and noisy torrents. The St. Gothard Railway rises to a great height before the tunnel through the rock is commenced; there are a great many short tunnels taking a spiral form before the long tunnel is reached. By means of these spirals the train ascends as it were a sort of corkscrew, and in some places three twists of the corkscrew can be seen at once. It is a very wonderful and interesting journey, and admiration is divided between the skill and toil of the engineer and awful solitudes of the surrounding scene. The train proceeds direct from Milan, without change of carriage, to Basle. Lucerne, with its lovely lake, is passed on the way, and those who wish to see some of the beauties of Switzerland are strongly recommended to make a halt there. An ascent, by railway or on foot, of the Rigi is strongly recommended. A few day's stay at one of the excellent hotels on the mountain is a very good tonic after the fatigue of sight-seeing in Italy. A new railway connecting Lucerne with Meiringen and Brienz brings Interlaken and the Bernese Oberland within easy reach, so that Lucerne will become more than ever head-quarters for Alpine tourists. At Basle trains branch off in a variety of directions, some for different parts of Germany, one for Paris; and one, avoiding Paris, takes the route viâ Rheims and Amiens for Calais, and hence a direct service, in correspondence, takes the traveller to Dover and London. Basle is, indeed, a sort of Clapham Junction of the Continent; there is hardly any part of Europe that one could not "book to" from there. It is a picturesque old town into the bargain. The little terrace by the cathedral overlooking the green, swift-flowing Rhine, is a place to be remembered.

CHAPTER IX.

FROM NAPLES TO PORT SAID.

CAPRI.—THE STRAIT OF MESSINA.—SCYLLA AND CHARYBDIS.—TAORMINA.—ETNA.—THE ASCENT.—MALTA.—CANDIA.—ABOUKIR.—THE BATTLE OF THE NILE.—PORT SAID.—AN EXCURSION TO JERUSALEM.—JAFFA.—THE SITE OF SOLOMON'S TEMPLE.—THE MOSQUE OF AKSA.—THE HOLY SEPULCHRE.—DIFFERENT NATIONALITIES.—BETHANY.—BETHLEHEM.—HAIFA.

THE voyage from Naples to Port Said is full of interest. For about one whole day we are out of sight of land; but then we are close to the scene of the famous Battle of the Nile, of which Mr. Hannay has written an account which will be found further on in this chapter. As we sail out of the Bay of Naples we pass close to Capri, an island which of late years has become a favourite English winter resort. The highest point of Capri is 1980 feet above the sea. There are two small villages, Capri and Anacapri, with about 4,500 inhabitants. Anacapri is situated some 800 feet above the sea, and both contain several hotels. There are Roman remains everywhere, and ruins are pointed out in various parts of the island as having been villas of the Emperor Tiberius, who is said to have had twelve palaces here. The famous Blue Grotto is on the northern side, near the landing place. Capri is about 20 miles from Naples. It is thus described in a sentence by Linda Villari, in the volume of the *English Illustrated Magazine* for 1887:—"Savage, sea-washed crags wall in a gardenland of softest beauty, and although so small an island—its circumference barely nine miles, its length four, its width one and a half—most varied scenery is comprised on its twenty square miles of soil."

We have recorded the histories of several great English victories, and as we are about to describe one of the greatest, it is but fair to mention that here in October, 1808, Murat beat Sir Hudson Lowe, the same general to whose charge a few years later Napoleon Buonaparte was confided at St. Helena. Colleta, the historian of Naples gives a detailed account of the taking of Capri, but modestly withholds the fact that he was the officer of engineers who showed the way up the almost inaccessible crag. Lowe surrendered after a fortnight's seige, "and had the mortification of seeing reinforcements arrive just after the treaty was signed."

From Naples the course is shaped for the Strait of Messina. Capri rounded the Gulf of Salerno opens; Pæstum with its temples lying in the southern bight of the Gulf. Then follows the elevated headland of Cape Palinuro, named after Palinurus, the pilot of Æneas, whose tomb is marked by a tower on a cliff some eight miles northward of the cape; thus is said to be fulfilled the Sybil's promise in the *Æneid*—

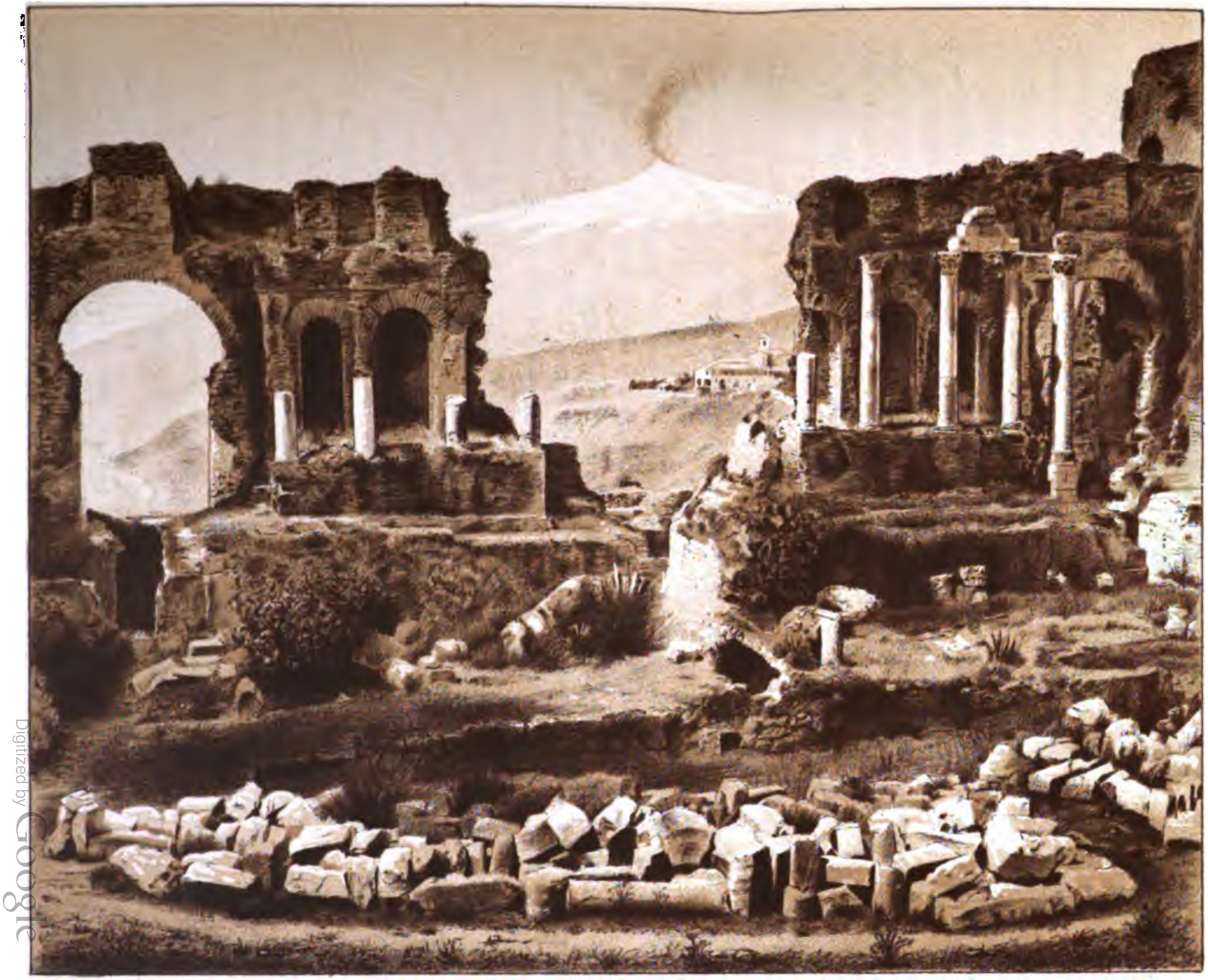
> "And Palinurus' name the place shall bear."

The ever active Stromboli is next sighted, and the Lipari islands passed to the westward. On these islands, the *Insulæ Æoliæ* also the *Vulcaniæ* of the ancients, Æolus held the winds imprisoned in caverns, loosing them at his pleasure. Here too Vulcan forged the bolts of Jove; the volcanic nature of the group giving rise to many of the myths by which the old poets put mind into matter.

The Strait of Messina is now entered, the steamer passing between the legend honoured rock of Scylla and the whirlpool Charybdis, and close to Capo di Faro, the Pelorum of the ancients; said by some to be so named after another famous sailor, Pelorus, the pilot of the ship that carried Hannibal from Italy, and killed by Hannibal in a fit of anger. The Carthagenian afterwards, assured of fidelity of the pilot, and lamenting his own cruelty, buried him in pomp on the point, and ordered it to bear the name Pelorum.

The currents in the Strait of Messina are variable, and at times attain a velocity of three knots; near the coast counter currents are experienced. The meeting of the opposing currents produces in several parts of the strait whirls and great rippling, locally known as "Garofalo." The principal whirls occur on the coast of Sicily, between Faro Point and Sottile Point with the ebb, and off Palazzo Tower with the flood. At Pezzo Point, on the Italian coast, there is a very strong "Garofalo," which is dangerous with a south-east wind. The eddies on the Sicilian coast appear to represent Charybdis. These straits at the northern entrance are but 2½ miles in width. On the Italian side, just north of the narrowest part, is the village of Scylla, standing 200 feet above the tidal eddy. Under the village, the rocks are hollowed away, and the agitated waters make the strange sound that legend attributed to the dogs of Scylla. The depth of water is no less than 70 fathoms.

Messina itself, founded by the Greeks as a colony nearly 3,000 years ago, is still



ETNA, FROM TAORMINA.

a flourishing port. The long line of its Marina, with handsome buildings rising one above another, the whole being backed by a dark forest, gives the town a fine appearance from the sea. The semi-circular harbour is natural, and would seem to have been at some remote period the crater of a volcano.

Messina seems to spread itself for miles along the shore on the right as we enter the straits. Old castles and towers top every eminence, flanked by strong modern forts, of which, one just within the harbour is the Citadel, and was the last place to hold out for Francis II. British forces have on several occasions occupied Messina, and it was from this place that brave Admiral Walton sent his laconic despatch to Byng: "Sir, We have taken and destroyed all the Spanish ships and vessels which were upon the coast—number as per margin." The cathedral is in part very ancient, having been built by Count Roger and his son, the Norman conquerors of Sicily, and has some fine Syenite columns. There is a small picture gallery which contains the faded—or still worse, restored—remains of five pictures by Antonello da Messina.

There is a railway from Messina to Catania, and the towns on the slope of Etna are very numerous and chiefly well-worth a visit. The most remarkable is Taormina. No description can do justice to the view from the ruined theatre. The old columns frame a view of the white summit of the volcano, with its tiny puff of smoke; and 850 feet below is the deep blue water of the strait.

The view of Etna from the sea is also very grand. There is no other mountain in Europe which gives the same impression of height, for we see all its 10,880 feet close at hand. The Sierra Nevada, in Spain, as seen from near Capo di Gata is slightly higher, but is then so far inland that it does not appear to over-top the low mountains in the fore ground. The chief villages worth mentioning along the strait, besides Reggio on the opposite coast, the capital of Calabria, are Aci Reale, and Aci Castello, both named from the torrent Acis, so well-known in legendary history, and immortalised by Handel in his opera of "Acis and Galatea." The stream may be made out from the deck as we pass. Before we are abreast of Catania we are through the Strait, and turn sharply eastward, so that Syracuse does not come in sight at all.

The prominent object in the view for many miles is Mount Etna. It is visible in very clear weather 150 miles, and is frequently seen from Malta, more than 100 miles off.

The best season for an ascent of Etna is the summer, and as a night must be spent on the mountain, moonlight is indispensable. The "Three Zones" of Etna are very well marked. First there is the cultivable zone, full of oranges, lemons and vines. Then, we reach, at about 3,700 feet, the forest tract, with fine shady trees, oaks, chestnuts and beeches, above which is a region of pine-wood, extending to nearly 7,000 feet. Thence to the summit is almost barren, though some small plants, peculiar to Etna, have heen identified by botanists. The black lava is over every thing, and in some parts of the slope the scene of desolation is appalling. The great cone, dazzlingly white, except at midsummer, rises from this lifeless region. The whole distance to be traversed from Catania to the cone is about 29 miles. The cold is intense, and even in the height of summer the thermometer falls below freezing point.

The view from the summit on a clear day is superb beyond description. Sicily spread out like a map; the Faro of Messina; the Lipari Isles and at times Malta on the south, and Vesuvius on the north, complete the magnificent panorama. Not the least interesting part of this splendid prospect is the distinct image of the mountain itself seen by means of its shadow projected upon Sicily.

Malta lies nearly due south from Sicily and has many attractions for the tourist. Its winter climate, in particular, being temperate, and indeed not unlike an English summer, makes it a pleasant residence for people in delicate health. There is much more rain at Valetta than in Egypt, for example: but, just as Cairo becomes too warm, Malta is at its best, and forms an admirable resting place on the way home.

The British dependency of Malta consists of three inhabited islands and some rocky islets, and lies about 57 miles south of Cape Passaro in Sicily. Gozo is the most westerly of the group, and is sighted first from an outward bound steamer. It is singularly wanting in feature being apparently flat, barren and brown; but outward appearances belie it; and Gozo, though only 10 miles long and half as many wide, is very fertile and very thickly inhabited. It contains some curious ancient remains, possibly Phœnician. Then, as Comino and Cominotto are passed, we have a view up the narrow inlet traditionally held to be the scene of St. Paul's shipwreck, and in a few minutes more come in sight of Valetta. On the high ground behind we may descry Citta Vecchia or La Notabile, the cathedral of which is supposed to occupy the site of the house of Publius, the Roman governor. In the valley below stands the church of Mosta, one of the largest domes in the world, but on account of its poverty of design and want of proportion it looks, from the sea, much more like a corn stack than a building. The dome, which within is quite plain, spans 118 feet, being 10 feet more than St. Paul's in London.

As Valetta comes into full view the beauty of its situation delights the observant traveller. There are, in fact, few cities so well planned and so highly favoured also by nature. On a lofty tongue of limestone rock, bordered on each side by a magnificent harbour, in either of which a whole fleet can anchor, Valetta is surrounded by suburbs as great as herself. I have counted thirteen domes in one view from the hill of Sliema. The architecture disappoints the critic, and St. John's, in Valetta, is one of the ugliest churches in the world: but no one can deny that the general effect of the streets is picturesque in the extreme. A few words explain the reason of this picturesqueness. Given a high cliff of dazzling yellow stone, rising from the bluest sea in the world: place on it a city, built chiefly it is true, in an uninteresting style of architecture, but carried in straight lines across and along the steep promontory, with long wide flights of steps at either side; and people it with a brown race, half Italian, half Arab, dressed in every variety of Mediterranean garb, and mingled with a throng of every possible sea-faring nationality, and you can understand that only the southern sun is wanting to make Valetta charming to the traveller. Add to this that the strictest order is kept everywhere, that flowers and fruit are abundant, that there is an excellent opera house and one of the best of clubs on the colonial model, and it follows that Valetta is a very pleasant place in which to spend a few weeks quite apart from sight seeing. It is well to take an introduction to an officer of the garrison, or some other person who can obtain the freedom of the Union Club for a friend, and a successful visit will be assured.

Malta was long under the domination of the Knights of St. John. In 1798 it was seized by the French without resistance, but they made themselves so odious to the people that a rebellion broke out, and some English ships coming to the assistance of the Maltese, the French were cooped up within their fortifications and starved into surrender, 5th September, 1800.

In 1814 Malta was formally ceded to England, and ever since the people have enjoyed all the rights and privileges of British subjects. Naturally, they are not content, and a new constitution which has been granted to them will probably work as badly as the old one; but after many centuries of oppression it is not to be expected that the people should understand free institutions. The upper classes, however, fully appreciate the benefits of English rule, and the Maltese are found all over the Mediterranean coasts, and are remarkable for linguistic attainments and intelligence. Many are employed in the consular service. The Maltese language is a dialect of Arabic, corrupted by a mixture of Italian. A little of the colloquial Arabic which a traveller picks up in the Cairene bazaar may be found very useful in Valetta. Italian, for some reason I have not been able to discover, is taught in the schools instead of English, but many Maltese make it a point to learn English, which, of course, is the language most likely to be of use to them.

With Etna in sight astern of her, the Steamer leaves the Strait of Messina for the land of Egypt, which will be sighted in something less than three days. During this time the only land seen besides Candia, with the snowy peaks of Mount Ida, 8,000 feet high, will be the little island of Gavdo, or Gozo, supposed to be the Claudo of St. Paul's voyage, to the southward of Candia. The low sandy coast of the Delta of the Nile may be first seen on passing Damietta, two high towers of which town may be seen over the flats. The whole coast is most flat and uninteresting. Between June and October the discoloured water met with far out of sight of land, tells that the Nile is pouring its vast contributions of sand and mud into the Mediterranean. Were we near enough to see them, Alexandria and its buildings would remind us of the bombardment and destruction of the formidable forts by the British Fleet, under Admiral Sir Beauchamp Seymour, and of the subsequent sacking and burning of the city by the Egyptian rebels. Of the great victory known as the battle of the Nile, Mr. Hannay gives us the following account:—

"The battle of the Nile, 'the glorious first of August,' though perhaps the most complete and astounding naval victory ever won is comparatively easy to understand. Our enemy was at anchor throughout, and there were none of those manœuvres, those tackings from port to starboard, and sudden turnings of van into rear, which so puzzle the landsman in accounts of fights under sail, and in the open sea. When Nelson's fleet hove in sight in the afternoon of the 1st August, 1798, the French fleet was at anchor in Aboukir Bay in the following order. There were thirteen of them in all—one three, and twelve two deckers. The most westerly was the *Guerrier*, 74. She was at anchor 2,420 yards or a mile and seven eighths, south-east of Aboukir island. Behind her at a distance of 160 yards from one another, and in a line sloping to the south-east were the following vessels, the *Conquerant*, 74; the *Spartiate*, 74; the *Aquilon*, 74; the *Peuple Souverain*, 74; the *Franklin*, 80; and *L'Orient*, 120, the flag ship of Vice-Admiral Brueys. Beyond the flag ship the line turned to south-east by south, and the vessels came in this order—the *Tonnant*, 80; *L'Heureux*, 74; the *Mercure*, 74; the *Guillaume Tell*, 80; the *Généreux*, 74; the *Timoléon*, 74. Thus the French line formed a very obtuse angle with its point to the sea. The head and rear vessels bore west-north-west, and east-south-east of one another. All were heading to the west swinging by an anchor, and each was to port of the vessel ahead. Inside the line, between the great ships and the shoal water of Aboukir Bay were anchored the frigates and small vessels. The two flanks were more or less covered by batteries on shore.

Such was the position of the French. The attacking English fleet consisted of thirteen 74 and one 50-gun ship, which it will be convenient to name in the order in which they came into battle.

Goliath	74 guns		Captain Thomas Foley
Zealous	74 „		Captain Samuel Hood.
Orion	74 „		Captain Sir James Saumarez.
Audacious	74 „		Captain Davidge Gould.
Theseus	74 „		Captain R. Willett Miller.
Vanguard	74 „	(flag)	Rear-Admiral Sir Horatio Nelson. Captain Edward Berry.
Minotaur	74 „		Captain Thomas Louis.
Defence	74 „		Captain John Peyton.
Bellerophon	74 „		Captain H. D'E. Darby.
Majestic	74 „		Captain G. B. Westcott.
Leander	50 „		Captain T. H. Thompson.

This leaves three vessels unaccounted for. They were the *Culloden* 74, Captain Thomas Troubridge which was at some distance to the north when the signal to form a line of battle and attack was hoisted on the *Vanguard*. The other two were the *Alexander* 74, Captain A. J. Ball, and the *Swiftsure* 74, Captain Benjamin Hallowell, which were far to the west. All three were crowding on sail to come up, and the names of their captains is proof enough that it was no fault of theirs if they were not first in action. Nelson had followed the French in hot haste, and when he sighted them in Aboukir Bay his ships were scattered. The rapidity with which the line of battle was formed, and the beautiful order in which the English ships came flying into the bay before the lively topgallant breeze from the north-west, extorted the admiration of the French. Nelson's plan of battle was founded on one drawn up by Lord Hood, a skilful strategist of Rodney's school, for the attack of a French fleet at anchor. His first intention seems to have been to place his vessels outside of the French, on their bow and quarter, but immediately before the action this first design was modified either by Nelson himself, or on the suggestion of somebody else. It matters very little who gave the first hint. The essential thing is that the Admiral saw that where a French ship could swing an English ship could anchor. In other words that there must be room to pass inside the French, and so by placing part of the English fleet between the enemy and the land, and part to seaward of him, it would be possible to bring an overwhelming force to bear on a portion of his line. As the attack was to be made on the van and centre, that is on the windward or Aboukir Island end of the French line, the leeward ships of the enemy would be unable to come to the help of their comrades. The English plan of battle provided for doing what is by general consent the greatest of tactical feats, for so placing a smaller force that it should be in overwhelming superiority at the point of attack. In order to obviate the danger of being raked while they were swinging head to wind after anchoring, the English ships had their sheet cables out of their stern ports.

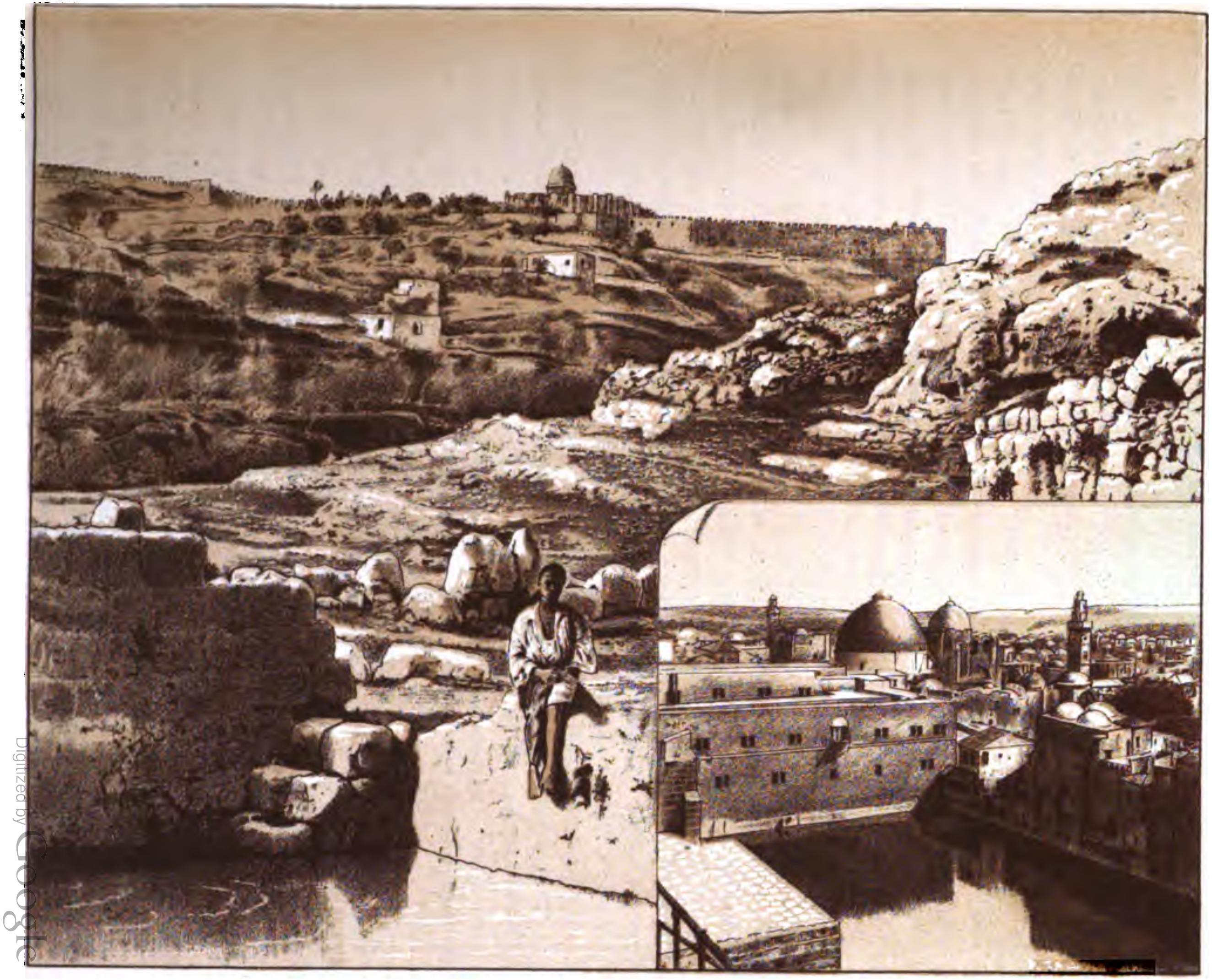
These cables were then carried forward just below the first deck ports, and bent to an anchor at the bow, so that when the anchor was let go the ships would run over the main or bow cable, and be brought up by the stern. Then by heaving on either cable it would be possible to spring the ship's broadside in any direction. Everything was in splendid order on the English ships, officers and men were alike animated by a noble spirit of confidence.

It was late in the evening—not, in fact, till 5.40—that the signal to form in line ahead and astern of the Admiral was hoisted on the *Vanguard*. But the English seamen of that period believed that night was in their favour—such was their reliance on their own discipline, and orders had been given to hoist four horizontal lights at the mizen peak as a signal. The sun was very low when the *Goliath* and the *Zealous* the two first of our line, came down along the east fringe of the shoals round Aboukir Island with the wind on the starboard side, and steered to cross the head of the French line. The enemy waited till we were at half gunshot from him and then opened fire, at 6.20, aiming too high as his wont was. Although the English ships, as they came in, were exposed to a raking fire from the French van, they suffered very little, as most of the shot went over them. Just before the sun went under the horizon the *Goliath* passed close ahead of the *Guerrier* and raked her with deadly effect. Then she turned to port and coming up on the inside of the French line anchored on the port quarter of the *Conquerant*, the second Frenchman. Captain Foley had run beyond his proper place, which should have been alongside the *Guerrier*. Captain Hood took up the anchorage he had missed and began pouring in broadsides. In a few minutes down came the *Guerrier's* foremast. This was the last of the battle the sun shone on, and it was greeted with a loud cheer along the English line. We had drawn the first blood. In the rapidly growing darkness of the south, and guided by the flashes of the broadsides, the *Orion*, *Audacious*, and *Theseus* successively came into place on the inside of the French line as far down as the *Peuple-Souverain*, the fifth ship. As the *Orion* came in she passed so close to the *Guerrier* that the Frenchman's jib-boom was barely six feet from her rigging, and then poured in a double-shotted broadside which brought down the enemy's two remaining masts, and left her a helpless hulk. The sixth ship of our line, Nelson's *Vanguard*, now came into action, anchoring on the outside of the French, alongside the *Spartiate*, their third vessel, which was already engaged with the *Orion* on the inside. Then the *Minotaur*, the *Defence*, the *Bellerophon*, the *Majestic*, and even the little *Leander* of 50 guns, followed in her wake, and placed themselves on the outside of the French line as far down as the *Tonnant*, the vessel astern of *L'Orient*. Thus ten English ships were engaged in positions of commanding advantage with eight

Frenchmen. All our vessels were not equally fortunate. The *Bellerophon* was dismasted by the fire of *L'Orient* and had to drift to leeward out of action. The *Majestic* fell aboard of the *Tonnant* and was badly raked for a time. Her captain, Westcott, fell shot through the throat by a musket ball, but Lieutenant Cuthbert took his place, got clear of the Frenchman and revenged his captain by cutting open the bows of *L'Heureux* with furious broadsides. In the meantime the three vessels left behind had come hurrying on. The *Culloden*, indeed, went ashore on Aboukir Island to the despair of Troubridge, but her lights served to warn the *Alexander* and the *Swiftsure* which came into battle in time to replace the crippled *Bellerophon*. Before this the French van was utterly crushed, and the English vessels were able to drop down towards the centre and rear. It was now between eight and nine o'clock. At about the latter hour the *Swiftsure's* people saw the first signs of the awful disaster which had overtaken the French centre. *L'Orient* was on fire. She had suffered much from the English cannonade which she returned most gallantly, and now some misfortune on board had set her in flames. Until ten o'clock the great three-decker blazed with fury, while the English ships cleared as far away from her as they could. Captain Miller, of the *Theseus*, whose noble letter to his wife gives the best account of the battle, had his vessel sluiced with water as a precaution against burning fragments when the inevitable explosion should come. At ten o'clock *L'Orient* blew up with a mighty roar, and a concussion which shook every ship in both fleets. Nelson, who was lying blinded by a wound on the forehead in the cabin of the *Vanguard*, rushed on deck at the crash, and began to give orders for the sending of help to the Frenchmen. By this time the battle was won. After the short pause of silence imposed by the dreadful explosion the English ships resumed fire and gradually worked down the French line crushing it as they went. When day broke Aboukir bay was full of crippled and dismasted ships. The victors had suffered heavily, but the vanquished were destroyed. Only three of the French liners escaped destruction in the night. They were the *Guillaume Tell*, the *Généreux*, and the *Timoléon*, that is to say, the extreme rear of the French line. Of these the *Timoléon* was driven on shore and burnt next day, but the other two escaped for a time, as the English ships were too severely damaged to pursue them. Neither of them ever saw France again. The *Guillaume Tell* was captured outside Malta Bay by the blockading squadron, and the *Généreux* was in Valetta harbour when the island was surrendered. It was the most complete destruction of an enemy ever seen—greater even than Trafalgar. The loss in the English fleet amounted to between eight and nine hundred men out of eight thousand men engaged. Of the French nearly eight-tenths were either killed or taken prisoners wounded or unwounded, or compelled to escape to the shore."

We now approach Port Said, a place from which the easiest access can be obtained to the Holy Land, as frequent steamers run to Jaffa and Beyrout. Before proceeding to an account of Port Said and the Suez Canal, we may ask Dean Butcher for his notes of a journey to Jerusalem.

" Those who have leisure on the voyage between England and Australia may, by leaving the steamer at Port Said, visit the Holy Land with ease and in comfort. A short sea passage takes one to Jaffa, the ancient Joppa. The landing here is not always easy, but when once we stand on the little quay we are repaid for our risk and trouble. Jaffa is full of mythical and historical associations. Here Perseus encountered the monster and rescued Andromeda—here the prophet Jonah took ship—here Peter, going up to the housetop, had his vision, and hither came the messengers of the Roman centurion, Cornelius, to teach the apostle the comprehensive significance of his dream. In the times of the crusades Jaffa was often taken and retaken, and in recent times it resisted for a few days an attack of the French General Kleber, but was finally captured. Napoleon ordered the plague patients to be poisoned here in 1799, and a doubtful tradition shows the room in which he gave the order. Leaving Jaffa in the afternoon, and resting for a few hours at Ramleh or Latron, we reach Jerusalem pleasantly in the morning of the next day. The journey first lies through the plain of Sharon, but soon after leaving Jaffa the road is rough and hilly, and as we proceed, after quitting Ramleh, the ascents are precipitous and difficult. The approach to the Holy City from Jaffa is disappointing. The commonplace residences forming the suburb known as ' New Jerusalem ' resemble the houses on the outskirts of any modern European town, and dash the high-wrought expectations of the pilgrim. He is thinking of the Mosque of Omar and the Church of the Sepulchre, and he sees only the huge mass of buildings known as the ' Russian Mission.' His anticipations, however, are more than satisfied when later in his stay he comes upon the view of Jerusalem from the Bethany road, and pauses on the rocky ledge where Christ ' beheld the city and wept over it.' It is impossible to give even a list of the objects of sacred and historic interest within the circle of Salem's walls, but the two buildings around which associations most thickly cluster are the Dome of the Rock and the Holy Sepulchre. The Dome is the superb porcelain-tiled cupola of the Mosque of Omar. The rock which it covers is the traditional summit of Mount Moriah, the scene of Abraham's arrested sacrifice of Isaac, and possibly the threshing-floor of Araunah or Ornan the Jebusite. Though opinions differ as to the precise spot which Solomon's Temple occupied, the traveller may perhaps safely conclude that 'the sacred edifice must have stood in the centre of the area on a second terrace probably corresponding with



POOL OF HEZEKIAH

DISTANT VIEW OF JERUSALEM

the upper platform of the present day.' Those who desire to get an idea of the shape and dimensions of the Jewish temples would do well to inspect the careful and elaborate models of Mr. Schietz, a German by birth and an architect by profession, who has spent more than thirty years in Jerusalem. The model in its first stage represents the hill upon which the present Mosque of Omar is built, showing the outline of the rock underneath the surface soil as determined by successive excavations. Upon this he builds before your eyes Solomon's Temple. Then he takes away this temple, alters the rock a little to represent some cutting work undertaken by the restorers, and builds up the Temple and walls of Nehemiah. Again he takes this to pieces and produces the Temple of Herod with all its Roman surroundings. Finally, he clears it all away, adds on a fresh covering to the rock which represents its present level and builds the present Mosque of Omar exactly as it stands on its huge platform. The precise appearance of the two temples, however accurately the modeller follows the descriptions in the Bible and Josephus, must be conjectural, but the traveller will learn more in an hour by inspecting these models than he would gather from months devoted to the study of the contradictory theories of the Jerusalem topographers, and we cordially recommend a visit to Mr. Schietz. Before leaving the Temple platform an hour must be spent at the Mosque of Aksa, a basilica founded by the Emperor Justinian in honour of the Virgin, but which has undergone many repairs and alterations and contains only fragments of the original building. Omar dedicated it to the Moslem faith, and it is a curious specimen of the Christian Church adapted to the uses of Islam—a conversion which may be seen on a small scale at Ramleh, and on a large one at the Mosque of St. Sophia at Constantinople.

The Rotunda of the Holy Sepulchre is a modern structure rebuilt in 1810. It is crowded with shrines and chapels, altars and oratories, lamps and pictures, images and icons. Whether the building, popularly called the Holy Sepulchre, does or does not cover the sites of the Crucifixion and Interment, is uncertain. It is startling at first to go up a flight of steps from the Holy Sepulchre, and to find on an upper storey of the same building the Hill of Calvary; but we must recollect that the garden containing the new tomb of Joseph was 'in the place where he was crucified,' and many students, most sceptical of the genuineness of the Holy Places have, after years of study, seen reasons for entertaining the belief that they may after all be genuine. At all events, they concentrate and bring to one focus the devotion of many nations. 'Daily and hourly,' says a recent writer,* 'year after year, and generation after generation, prayer goes up from that central altar of Christendom in every tongue spoken on the face of the earth. Persian and Hebrew, Greek and Latin, Arabic and Armenian, Russian, Italian, Spanish, German, French and English, besides countless dialects. Very rarely will you find the tiny shrine, which is called the Sepulchre itself, untenanted, even for a moment. Perhaps a woman, so shrouded in black robes that it is hopeless to discover her nationality, crouches in the corner, her only audible prayer a broken hearted sobbing. Then a youth in Turkish dress comes in hastily, and standing upright before the altar, lifts his arms to heaven and bursts into his petition with passionate cries, yet in a tone hushed by intense reverence almost to a whisper. He is followed by a Latin monk, who kneels and crosses himself in earnest if formal devotion. After him a shepherd from the Judean hills in the rough but picturesque garb of the East, treads the marble with his brown, unshod feet, and reverently removes the turban which he would doff for no human dignitary, as he repeats his simple prayer. Then a Greek priest pauses at the entrance to take off his black cap and shake a flowing mass of hair upon his shoulders—so worn as they believe in imitation of our Saviour. A young girl with a white lace veil upon her head, and evidently in festal dress, comes in attended by one friend—the shrine will not hold more than three people at a time—to consecrate her day by an act of devotion. All these and many more I watched myself during the quiet hours of meditation which we spent in the church.'

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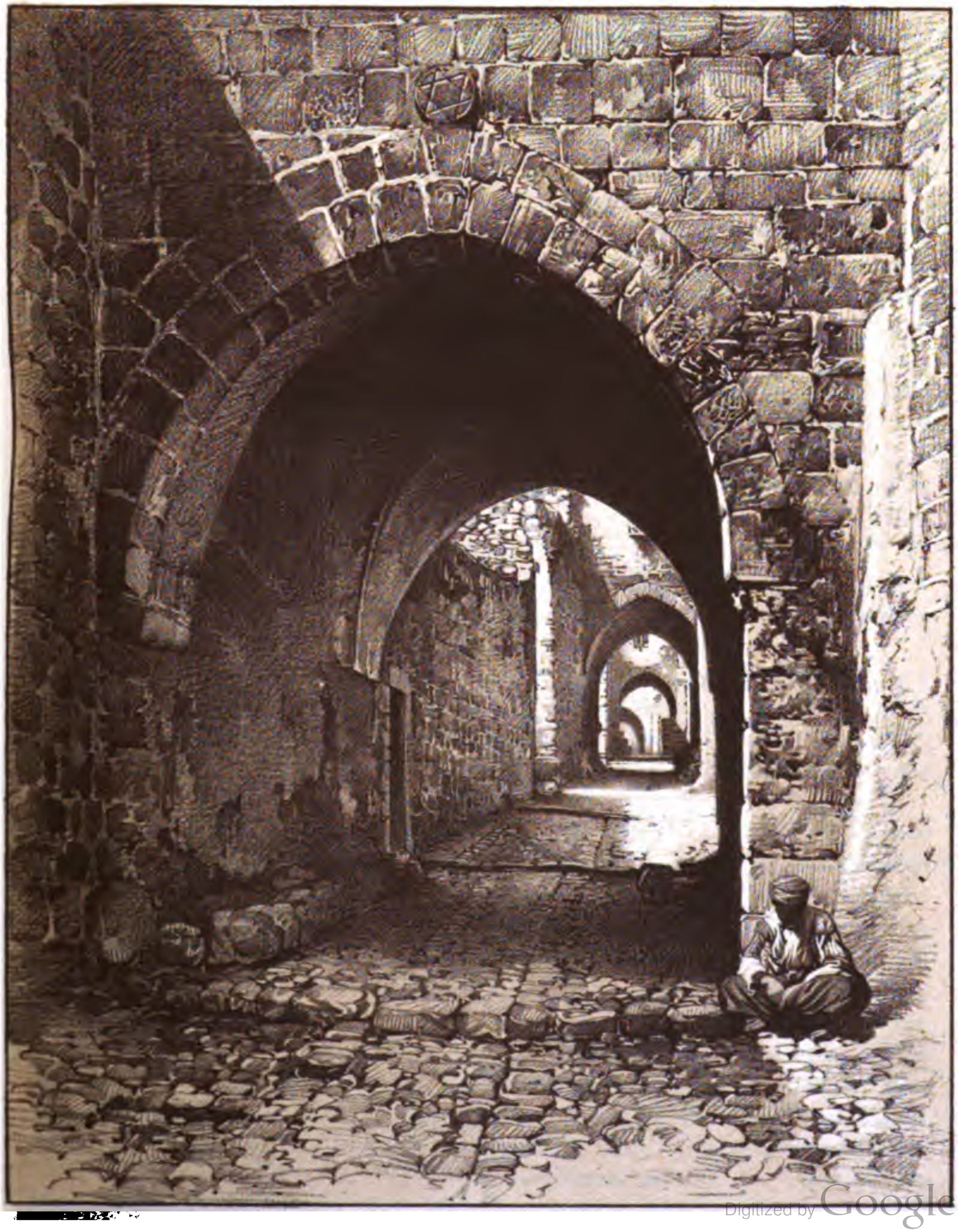
* *Every Day Jerusalem.*

The Mount of Olives and the Garden of Gethsemane are the scenes that bring most vividly before the religious mind the events of the sacred story. These localities 'compared with which the High Altar of St. Peter's would seem profane,' are the real holy places, and it is easy to people them with the figures of the Gospels, and to recall the events that have so deeply influenced the world. The olive trees may very easily be the descendants of those which grew here in the time of Christ. They are certainly some of the oldest trees in the world, and 'their gnarled trunks and scanty foliage will always be regarded as the most affecting of the sacred memorials in or about Jerusalem.' The streets of Jerusalem are intricate, narrow and dirty. The bazaars are smaller in size and poorer in their display of wares than those of Cairo. There is little to attract the purchaser, and when he has bought photographs, olive wood ornaments, and silver crosses, be will be glad to extricate himself from the crowded and suffocating alleys, and to find himself outside the gray walls. A visitor resolute enough to put up with filth and ill smells will find amusement and instruction in watching the groups in the streets, and noticing the ever changing and ever new combinations of



AN OLD STREET IN JERUSALEM.

bright colours and picturesque forms. The different nationalities represented will soon be distinguished. Turkish soldiers, Coptic priests, Greek traders, Arab Bedouins, Franciscan monks, Spanish and Polish Jews jostle each other in the dark low-arched streets, and illustrate the cosmopolitan character of the city, which is alike 'Holy' to the East and West. Every year adds to the number and importance of the Jewish population, and they are rapidly acquiring property and settling down in and about Jerusalem. They have not yet begun to improve their synagogues, which are the most neglected and slovenly places of worship in this city of many creeds. On special days, however, the ceremonies in that of the Ashkenazim are striking, and the Friday gatherings at the Jew's Wailing Place are impressive and pathetic. Old and young, rich and poor frequent this spot, and with tears and lamentations bewail the misfortunes of their nation, and pray for the time of restoration and return. The litany used is a collection of sentences from the Book of Lamentations, and is recited in a plaintive, wailing voice which strikes the listener as singularly pathetic and heartfelt. The antiphons, 'We pray Thee have mercy on *Zion*;' 'Speak to the heart of Jerusalem;' 'Comfort those who mourn over Jerusalem;' have a force and solemnity when heard in this spot which make a lasting impression on the mind.

The village of Bethany, called Al Azarîyeh, the village of Lazarus, is a small poverty-stricken place, but it is well to visit it and return towards evening along the road before referred to, so as to obtain the glorious view of Jerusalem, which is associated with the triumphant entry of Christ, and the weeping over the City.

Bethlehem will demand a longer stay. The Church of St. Mary, erected over the traditional birth-place of Christ, is disfigured by a hideous white-washed screen separating the Latin from the Greek portion. The roof was repaired by our own Edward IV. There are curious mosaics, and rude paintings on the walls and columns. The Grotto of the Nativity is illuminated by silver lamps, The manger-bed, or rather the spot where it was supposed to be, is marked by an Epiphany Star, also in silver. Rich paintings and ornaments adorn the shrine, which is a place of pilgrimage and devotion, frequented by all Christendom. A secondary interest attaches to the spot from its having been chosen as a retreat by St. Jerome. The convent of the Franciscan monks offers its hospitality to the traveller, and he may profitably and happily spend two or three days in Bethlehem, sometimes seeking the quiet of the Nativity Church and grotto, and at other times wandering over the Judean hills and watching the shepherd-life, which is little changed since the days of Ruth and David.

The excursion eastward to the Dead Sea and the northern expedition to Damascus can be easily made by the expenditure of a little more time and money, and if possible a visit should be paid to the flourishing settlement of Haifa, a centre of new activity and enterprise, which may largely affect the future condition of Palestine."

CHAPTER X.

GREECE.

MR. RICHMOND, A.R.A. ON GREECE.—AUTHORITIES.—THE ISLES.—SYRA.—DELOS.—NAXOS.—CORFU.—THE MOREA.—MYKENE.—ARGOS.—A GREEK WEDDING.—MANTINEA.—SPARTA.—CRIME IN GREECE.—A MONASTERY.—MESSENE.—TEMPLE OF APOLLO AT BASSŒ.—OLYMPIA.—GREEK ART.—THE MUSEUM AT ATHENS.

IT is very easy to visit Greece from Port Said, Alexandria, Naples, Malta, or many other places which lie on, or close to our route. The following notes of a recent visit have been written for us by the distinguished artist, formerly Slade professor at Oxford, Mr. William B. Richmond, A.R.A.:—

"There is an enchantment for all intelligent minds in the name of Greece. Its history, literature, and art, have, and will exercise a peculiar fascination. To the entire comprehension of the intellectual development of any country, a personal acquaintance with it should be added, and for those who will make even a short tour in the Morea, provided they accompany themselves with a translation (if they do not know Greek) of the description of Greece, by Pausanias, Colonel Leake's *Travels in the Morea; Rambles and Studies in Greece*, by J. P. Mahaffy, and Stuart's *Antiquities of Athens*, and above all Herodotus, a great store of pleasant and profitable knowledge may be laid up. A little book by the learned Greek scholar, Professor Jebb, entitled, *Modern Greece*, should somewhere find a place in the handbag of the traveller. Dr. Schliemanns' valuable work on Tiryns and Mykene, if possible, should be read, and Dr. Curtius' *History of Greece* will prove to all tourists the most valuable of any of the histories we know of, from the local and intimate geographical knowledge of its accomplished author. Such books will supply the evident deficiences in this account of two tours in Greece, made in 1882 and 1883; no place is mentioned herein which the author has not personally visited, and this sketch is little more than a copy of a diary kept at the time. Travelling in the Morea is most pleasantly done on horseback. At Athens, a dragoman can be obtained. The Hotel d'Angleterre is the best hotel, and the dragoman, "Apostolis," will be found an honest and intelligent servant, who will arrange for food, lodging, mules or horses at a reasonable rate.

For the purpose of a visit to the islands of the Ægean Sea, the traveller should embark at the Piræus, in one of the steamers passing there—to and from Constantinople, and land at the island of Syra, where the English Consul will help him to arrange with the owner of a caique to take him a tour among some of the more interesting islands. But he must not be misled into taking a small boat for such a purpose, as the north wind is apt to fall with sudden fury among the islands, and render it impossible for small craft to move from place to place with any security.

The island of Syra is too much neglected by travellers. Three days can be very well spent among its romantic mountainous country, and the beauty of the bays on the eastern side of the island are unrivalled. Donkeys can be hired at a very reasonable rate. The first day should be spent on the western heights, from whence magnificent views of the clusters of islands stretching away for miles to the clear horizon are visible;—Delos, Tenos, Naxos, Mykonos, names so full of association to the lover of history, are spread out upon the broad blue sea. The second day, the rocky inland, varied and luxurious growth of fig trees, olive, and cactus, will repay a visit; while the third day spent in riding along the eastern coast, wandering among the bays, where the blue water, deep and clear, scarcely conceals the precious colours of its basin, will enchant and delay the traveller. Upon this island there are no antiquities. It is the chief port of commerce between the east and the west.

Delos lies some fifteen miles to the east of Syra, like a snake upon the water; sacred to Apollo and his birth-place, the birth-place of Artemis, untouched by the Persians during their invasion, indeed claims a visit. There are many remains here,—statues *in situ*, temples in ruins, fallen fragments of masterpieces, lie about in confusion. The ancient temple to Apollo, perhaps older than the Cyclopœan walls at Mykene, stands within an easy walk from the landing place. Partly built, partly hewn out of the rock, the edifice indicates the afterwards perfected forms of the roofing and pediments of later work. Two stone gates, sixteen feet in height, remain upon their hinges. A winding series of steps lead up to this most interesting relic of prehistoric times. A fragment of an archaic statue of colossal proportion, lies upon the ground between the remains of the Ionic temple to Apollo, and an inland lake, whereon mimic maritime wars were enacted, who knows how full ot antiquities its remains. The fragment mentioned is probably a portion of the celebrated statue to Apollo mentioned by ancient writers. The island presents much interest for geologists, volcanic influence being everywhere observable, especially on its south-eastern side. For inscriptions, the remains are rich. The greater number of statues found on Delos, have been removed to Mykonos, whither it would be well for the traveller to sail, and visit the sheds where lie some of the earliest Archaic Greek works of art in existence.

There can be little doubt that the excavations begun on Delos by the French, if carried on, would yield yaluable results. The great wealth of the island in ancient times, and the importance it held through Roman, Byzantine, and Venetian rule, makes this little spot on the world's surface one of the most valuable to historians and archæologists. In an early number of the *Hellenic Journal*, an essay, by Professor Jebb, concerning the history of many of the inscriptions, will be found interesting.

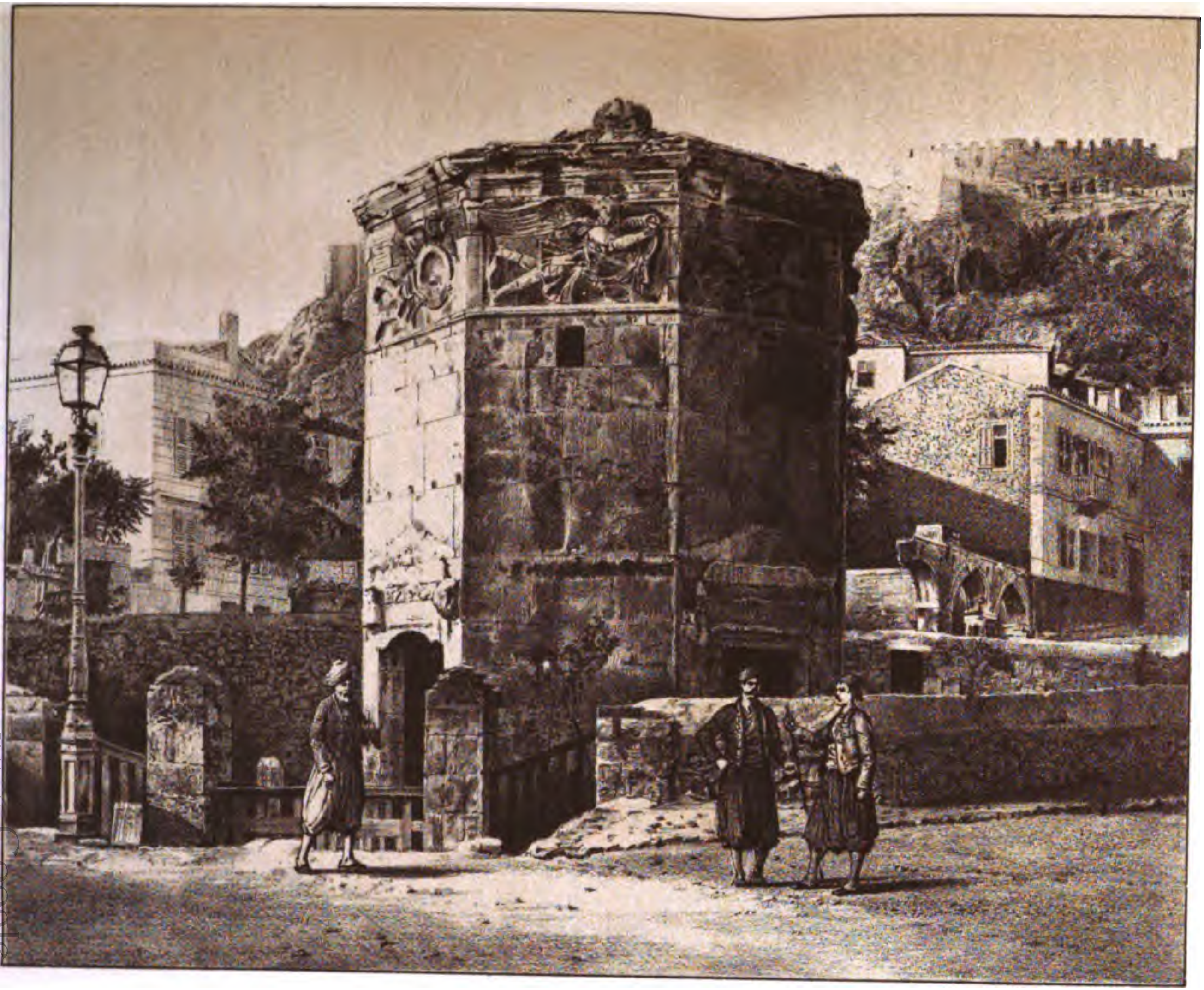
The island of Naxos should be visited. The interior of the island is wooded; the people are savage and little to be trusted. Volcanic ravages are here to be observed in every direction. The traveller will find himself obliged to sleep in his boat in most of his journeys among the Ægean islands, unless he takes a tent, servants, and provisions, on any occasion that he may find necessary for exploration obliging a night out. For effects of colour, for the extreme beauty of arrangements of form, in an atmosphere pure, and a climate perfect, no more delightful place on the earth's surface is there than the group of the Cyclades. Corfu, reached from Brindisi, is the chief of the Ionian Islands, the ancient Corcyra, identical according to the ancients with Scheria of Homer, where the Phœacians dwelt, governed by Alcinous. So lovely is this Madeira of Europe, that days may be spent rambling or driving hither and thither; not much matter where, for the last prospect seems ever the loveliest. Across the bay the Albanian coast rises in savage mountainous grandeur, and as the sun sets upon that rocky line of hills, no scene pictured by Turner in his most abundant moments of creative power, can approach the natural effect in the multitude of tints, the majesty of form of the many views to be enjoyed. Thucydides gives authority for the statement that Corfu is the Phœacia of Homer. The only stream of importance which empties itself into the sea, lies between Manduchios and Govino. The Fountain of Cressida, four miles south-west of the town, is named as the spot where Nausicae and the maidens found the crafty Ulysses.

The island of Fano, visible to the north, it would seem probable is the well-known island of Calypso. Behind the Casino, situated about two miles from the tomb, in an olive wood, is a small Doric temple, which should be visited. The historic ground passed over between Corfu and Patras, is too well-known to need mention. Ithaca should be visited, if possible. Patras needs no mention, save for the Venetian fortress behind the town. A steamer takes passengers from here to

Corinth, where, we will suppose, horses, dragoman, cook and provisions, all ready hired and prepared, await us for a ride through the Morea or Peloponesus. Of the great city of Corinth, nothing remains save some rude Doric columns, clumsy in style; so it is needless to lose time there, but a ride to the Acro Corintho is made, not in hope of finding any traces of the ancient world, but for the sake of enjoying one of the most wonderful panoramic views in the world. The whole of the Morea seems stretched before you: the sea bristles with island peaks; the mountains of Attica fringe the eastern outline; the Gulf of Corinth stretches away to the west, like a huge lake; in the north-west Parnassus rears his mighty head in the blaze of golden light,—fit place indeed for Apollo and the Muses, sheltering the lower lands of Delphi; Achaia and Elis to the west; Argolis and Nauplia to the south; Mantinea and Olympia on the south-west; chain after chain of sapphire mountains, like the waves of the Atlantic, form and reform in phalanxes of winding and mighty stretches of from; our eyes are carried from one peak to another, led to wander in the tortuous passages of valleys, rested here and there by the solemn blue line of the sea, enchanted with variety, and we are unwearied to watch the shifting lights and shades from daylight to sunset!

An early start before daylight through arid sandstone hills and watersheds, filled with arbutus and oleander; a pause by the side of the river, shaded and cool, even in the mid-day, and on to Cleone, allied to Argos, celebrated by its vicinity to Nemea, where stand in the valley three columns of the temple of Jupiter, of Doric form, and Ionic proportions. Fragments of the Nemean theatre are to be found not far distant. But where is that flow of population to view the games? Where is the Sanctuary? Those long stretches of hills around the plain of Nemea have seen strange sights,—dumb witnesses indeed. On by Condostavli, where we find ourselves in the centre of a pastoral life, threshing ground, one here common to all, fruit and irrigated lands, and watchmen day and night abound for the fear of marauders. Over hills, through valleys, we ride till the plain of Argos opens out, guarded by Nauplia and the sea, and Chirvati is reached, and rest we must take before mounting to Mykene. The so-called Treasury of Atreus we come to, once the domed internal surface of it was covered with metal, and the now cavernous darkness sparkled with mysterious reflected lights. How beautiful is the diaper design upon the bases of slender columns which flank the entrance and the doorway, inverted form of Egyptian construction. What perfect workman sawed and laid the great slabs of stones without mortar! Did the far East bring emblems of fire worship hither into Greece, centuries before the Dorian invasions? Can those lions in a niche forming the pediment over the wide gate of Cyclopean work be any but of Eastern birth? Asia Minor has the

ATHENS.



TOWER OF THE WINDS.

rough sketch of them, and India can show the column or altar, whereon are logs of wood for sacrifice. Are not these, and the Treasury of Atreus, of later date than the mighty piles of stone which form the walls of Mykene.

It is for others to judge whether or no the palace of Agamemnon and the tombs of the great warrior and his predecessors really were where recent authors have placed them; but that the towering hill, within call cry of the acropolis of Mikene, was other than the site of the beacon which flashed the intelligence of the return of Agamemnon to the watchman upon the roof of the Palace of Clytemnestra, it is not reasonable to doubt. From this height the whole plain of Argos is visible, Argos itself, and her port Nauplia, where Agamemnon must have landed. We stand, late in the summer evening, and see the shadows creep over the plains, up the mountain-sides, and wait till the moon rises; gold has become purple, the pall of night spreads her spangled mantle over heaven; our minds are full of imaginings, we have seen one of the famous places of the world, wrapt as it is in the charm of mystery. At Athens are to be seen in the museum all or nearly all the gold and silver ornaments found by Dr. Schliemann within the chambers excavated just within the gateway. And notice in their style, not Egyptian, nor yet Assyrian influence, but something more directly Eastern, Persian or Indian. A hot dusty ride over the plain brings us to Argos. Overlooking the flat lands, sheltered in the west by a great range of hills forming a boundary between Argolis and Mantinea, is the site of the once famous city; south-west rises the Venetian fortress of Nauplia; Tiryns, a little to the north. The theatre, hewn out of rock for the main part, once held 20,000 people. Cyclopean remains, Roman baths we visit. Of the museum little need be said excepting as regards some coloured terra-cotta work of a good Greek period. To Tiryns is an easy drive. Here a low acropolis, on the surface of which are two distinct levels; two lines of walls, a keep, dark galleries, where are windows and seats for the guard. Recent discussion has opened a serious question as to the period in history where the result of Dr. Schliemann's and Dr. Dortfelt's discoveries made lately are to be placed.

Sunset gives way to the young moon, which becomes clearer and clearer in the dull rosy orange of twilight. The mountains keep their relative distances, warmest in colour are the nearest; they appear to die away towards their feet in the plain covered by delicate grey mists. Full purity of colour breathes an influence, the eastern sky and landscape are deep blue, sky and land seem overcome by the same influence of sleep and rest; more marked is this dreamy effect of Nature's repose in Greece than in Italy. The moon goes down behind the mountains like the remnant of flame yet burning with the heat of Helios. We return to Argos to sleep. Early morning, before daylight, we are in the saddle merrily trotting down the plain of Argos towards the opening between the Argolic chain of hills known as the pass of Parthenium; we leave the Lernean marsh on the left, scene of the dread Hydra and Heracles. Varied indeed is the scenery—gorges, in winter filled with rushing streams and cascade, are empty and dry, grey and desolate save for the oleander in full bloom; constantly we mount, pass by the sterile rock country, catching glimpses here and there of corn-threshing yards, of oxen and mules urged over them treading the newly-gathered corn. Crags of burning red sandstone rise one over the other like flames to the sky. A very oasis of fresh green opens suddenly to us in the midst of the burnt earth, where the blackberry, wild pear, and apples grow in abundance. From the grim East we are suddenly found, might be in a Devonshire slope, where the cool shades of the chestnut trees, and little streamlets refresh our men and horses. But as we proceed we leave all verdure suddenly again save the Arbutus, and find in a steep *zig-zag* ascent enough for our patience, and a test to the strength and endurance of our horses; scarcely more than foot room for the beasts, in a path made on a steep decline of perhaps a thousand feet. Occasionally stone huts appear and disappear as we journey along an upward but circuitous path, pass after pass has to be overcome before we find ourselves in the middle of a colony of shepherds. Well wooded it is up here, and peopled too. Like Umeas and Odysseus we are received with criticism and astonishment by women at the wayside well. And not long is it after our rugs are spread under a fig tree, and sardines and melons have received undivided attention, than the curious villagers surround us, the women in white loose garments, the men in sheepskins.

This pastoral colony finds food in the mountain regions for its flocks in the summer, while the milder climate of the plains gives shelter and food during winter. The Papos joins us. A marriage has taken place. Olivepipes and bagpipes like to the Irish make music. The villagers dance to the strains in movements alternately swift or slow, in a circle, crossing hands, just as is seen represented upon many a Greek vase. When love is the motive, the dance is slow, quiet and measured; when of war, wild gestures, and quick, abrupt steps indicate the subject of the dance. A glimpse we have into the open free life told of by Theocritus, and scarcely can we imagine ourselves to be partners of a generation of railroad and steam; rather for the moment the dim past, only true to us by associations, becomes a living reality, and the moving scenes, real to the ancient poets, to us but literary remains of what might have been, are for the time a consecutive and living heritage, and we become in direct communion with the facts of ancient times as the poets were by them inspired. We leave the merry scene, enlivened by the excellent wine, and pass again into rough country to Tipsianà, a straggling dirty town, 3,000 feet above the sea level, surrounded by mountains opening only on to the centre of the plain of Mantinea. We start early, and pass through richly cultivated land. Maize, barley, and tobacco in abundance, on an upland 2,000 feet above the sea. The plain of Mantinea, stretching nearly due north and south, is about the centre of the Peloponesus; on the south-east side lies Tegea, from whence the Theban army under Epaminondas started to attack the Spartans, 362 B.C. Mantinea is situated towards the north; the circuit of the walls of the famous city is entire, the walls are built of brick—there were 118 towers and ten gates. Hadrian rebuilt the town, but scarce any vestiges of his time remain. Especially interesting is this locality, if the graphic account of it by Dr. Curtius be remembered. We can sit down and see in our mind's eye the memorable fight. The army of Epaminondas marched from Tegea and spread terror among the Mantineans; the Athenian auxiliaries arrived on his rear numbering 6,000 men, and Epaminondas was forced to retreat to Tegea. Here he re-formed his troops and advanced through the Pelagus forest into the enemies' country. Thebans and Arcadians formed his left wing, Eubœans and mercenaries formed the protecting right wing. The Thebans attacked the Spartan cavalry and scattered them. Then the entire army under the leadership of Epaminondas approached from the base of the heights. The Mantineans, the Lacedæmonians, Eleans and Achaeans, with 6,000 Athenians, in all numbering 22,000 men, awaited the attack of Epaminondas; soon the entire centre of the enemy was broken; in the moment of victory Epaminondas was killed, and on the field of Mantinea was he buried.

From Mantinea the traveller advances to Tripolitza now a small place, but under Turkish rule it was a flourishing city of 20,000 inhabitants.

A ride over undulating country, not unlike the Roman Campagna, brings us to Tegea. Evening light gilds the surrounding hills with rose and gold. Of the ancient city there are few remains: some remnants of walls, columns from a Byzantine church of early date, built out of the stones of the temple of Jupiter, are all that exist to mark the place where a famous city once stood. We find clean lodging; but, alas for the crowing of cocks and barking of dogs, sleep is a commodity one must dispense with in these interesting regions. An early start, we follow the plain—a monotonous ride over stones, down a ravine, walled in by perpendicular cliff—till Kyra Vuysis is reached. Nothing noteworthy here. Further on we gain a high plateau, from where the Laconian hills, and a first view of Taygetus, opens upon us. Aracaova reached, a dirty town where no one should sleep can they help it. A dreary start on a chilly September morning, down the slippery mountain's sides, into the bed of one of the tributaries of the river Eurotas, on either bank, shaded by maples in full leaf, a swift little stream passing down the centre of its river's bed. We are escorted here and there by flocks of goats, with their shepherd and his usual unpleasant cowardly companion, his dog, whose unhappy life is made up between barking till he is hoarse, and running away from stone throwing; the only method whereby strangers can avoid his malicious attacks. The whole ride from here to Sparta is in every turn of it interesting and varied—sometimes steep, often dangerous—and here let us put spurs on our heels; many a fall of our horses may be avoided by their use. The Hagios of St. John passed, we gain our first view of the large Spartan plain, and the range of the Taygetus mountains, stretching 70 miles from sea inland, the mountain wall between Mesenia and Sparta.

This range of mountains does not rise abruptly from the plain. It ascends by buttress like hills of from 5 to 800 feet high, which spring directly from the flat olive groves. The bed of the Eurotas is not dry; there are two swift streams flowing over the stony bottom. By the verdure of the flat land which borders the river, we recognise how wide and full is the Eurotas in the rain time. This bright green, even in September, continues up almost to the base of the five hills behind which, in the space between them and the mountains of Taygetus, ancient Sparta stood. At no place, however, can the river be very deep, as there are no bridges, but many fords. The Modern Sparta is of no account. Mystra, a Byzantine city, situated upon a commanding position under the mountain range, was the residence of the Spartans till 30 years ago, when the greater part of it was destroyed by earthquakes, and the rest fell into ruins. Perched up above the city is a Byzantine church of great beauty, belonging, probably, to about the 9th century. The whole interior is painted with designs from the new Testament. Some are good; they are not all of the same date. The caps of the columns are beautiful in design. No one should fail to visit this Church. We enjoy the glorious view from the arched terrace outside the church door. A more sumptuous view cannot be imagined. From Artemisium, on the borders of Arcadia, to the island of Kythera, and the Laconic Gulf, our eyes travel. As the sun sinks behind Taygetus, the shadow of the great mountain, St. Elias, 7,905 feet high, creeps over the plain, and up the mountain sides, up the eastern border of the plain to the tops of the hills, till it melts into the sky, and we are suddenly overcome by night. Of ancient Sparta as Greek, nothing remains. Even the later Roman work is obliterated for the most part, still the intelligent traveller can follow the plan of the old city, so carefully made out by Colonel Leake. We were glad to hear that the Archæological Society of Athens had purchased the olive fields, the site of Sparta, and were going there to commence excavations. The Demark told us that at least six metres of earth would have to be dug out before any Greek remains of the city would be forthcoming. In the museum of Sparta nothing noteworthy is there. In the garden of a private house a large pavement of Roman work of the 1st century. Europa carried off by Jupiter in the shape of a bull is the design, boldly but coarsely executed. A ride to Sofia, through well watered lands is refreshing, and during rest under a great fig tree, we think of the stories of Helen, Meneaus, Paris, of the strong Lycurgus, and of Lysander, adored as a god, the most gifted of Spartan statesmen; of the vigorous training of the people—women and men; the rude uncultured life of them, so unlike the Athenian refinement and elegance; these and other memories of the past glide before us.

The calls of our guide to the horses strayed into a maize field, and the long shadows forming over the valley, awake us from a reverie. Returning to Sparta, we twice cross the Eurotas up many a steep bank, through marshy ponds, by fertile lands, forests of canes, almost, hiding places for Pan; we pass flocks of goats and sheep, led by their shepherd playing on a sweet-toned flute to the full orchestra of sheep-bells, for every sheep wears a bell, and each bell has a different note, thus occasionally the loveliest harmonies of sound are produced. The still evening, a breath now and then just strong enough to quiver the poplar leaves, what more can we desire to recall all delightful emotions of those past poets who are our present delight. Tall white stems of poplars shine like silver in the twilight, the hills are blue crystal, meadows there are of soft green, hillocks covered with arbutus, crowned with gold of gathered corn-fields: thin little streams pursue their way hidden under vines or fig-trees, and the sound of their trickle is like the song of the river maidens, telling us of pastoral life; the sheep bells die away in the distance, the shepherd's pipe grows fainter and fainter, mists rise, they lie like white spirits over the ground—we must speed to shelter, for malaria poisons too quickly in this lovely country. To Tripi, across the lower hills of Täygetus, we ride through lemon and orange groves. This village is on the spur of one of the ranges of Täygetus, 1,000 feet above the plain, picturesque, not unlike an Italian town. Our guides dance merrily all the evening. The oak, chestnut, and plane tree abound, the cool climate of this higher land preserves the verdure of the foliage in this time of early autumn. The country people are charming for their simplicity; it is no uncommon thing for the country folk to be possessed of a comparatively considerable fortune. At Sparta our host owns a hundred and seventy thousands franks in personal property, though he lives upon something under the value of a frank per diem. There is little real poverty in Morea; the people are provident and very abstemious, gay-hearted, and content with little external comfort, but, like their ancestors, they are great lovers of money. The population is much on the increase; women have children every year, and a barren woman is scarcely known. In our wanderings at Sparta we come upon the theatre, and the Agara according to Leake, also, at the south end of the site of the city, we find a tomb, a brick building of Roman time. The semi-circular design of the theatre is distinctly visible, buried though the greater part of it is. The theatre of Sparta was used more as a gymnasium than for histrionic art. We leave Tripi, and make a succession of steep descents, stony and dangerous to horses. East and west of us rocks rise in the abnormal precipices, often covered for a hundred feet and more with thick masses of ivy. These mountain-sides and deep water-courses, laden in winter with the water flowing from the hillsides, makes a wild torrent in the gorge, leaping in its race and lashing the precipitous confines of it in a fury of haste, now the bed of the stream is only a white mass of polished smooth rock, revealing the revel of winter's sacrifice by the presence of slain trees caught among the clutches of the rocks, brought among them by the swirl of mighty waters from the hills. At every turn gendarmes have their little habitat of four poles, covered with dry sticks and autumn foliage as shade, for the thieves abound, and now the fair at Mistrà, bringing merchants to it from all parts of Messina, who are game for robbers, and escaped prisoners, or those from the Maniote country whose crimes have obliged them to become dishonest and malevolent hermits. After a series of passes, all beautiful or of savage grandeur, we suddenly find ourselves on the bed of a stream; alongside the paths lead through a forest of maple trees of huge proportions, whose exposed roots stretch like serpents from rock to rock and make our progress difficult. These maple groves are common in Arcadia, and in these lower mountain ranges; the oak and holly are rare, but the plane grows in great luxury. There is growing here a small oak, having a leaf like the ilex but shorter and rounder, bearing an acorn of singularly beautiful yellowish green, larger than the leaf. On the higher ranges the fir tree abounds. Four hours' riding, or rather scrambling, mules obstinate, horses tired, drivers quarrelling, we reach the kahn, or hut, where rest from fatigue and shade from the burning sun is very agreeable. This hut, used by the guardians of the pass, is occupied by a dreary rakí seller; a man sits in one corner making barrels for wine with a chopper; a savage little woman spins, and two little children play whose expressions point towards the nearest goal. Sardines and bread are consumed, and the usual meditation after midday is taking place, when down the pass we have just traversed come three soldiers, leading between them a young man of about eighteen years, manacled, and led by a rope round his neck. He is a Maniote, for three years an outlaw for two murders, yesterday he had been caught, and is on his journey to the gaol at Kalamata, there to begin his term of seven years' punishment. A worse face we never saw.

To show the state of things on this borderland of Mani, we are told that only yesterday a convict from Kalamata, having completed his time of prison life, chanced to meet the cousin of the man for whose murder he had undergone punishment. Not knowing into whose dangerous company he had fallen, he drank wine with his supposed comrade, but as they parted he received the blow from the bullet of his victim's brother, and there and then fell dead. These Maniotes care not how long their vendetta may be delayed, and transmit their vengeance from generation to generation. And we continue our journey up to the highest point of Mount Elias, 4,000 feet. From here the gulf of Coron comes to our view, the plain of Messene; and we leave the range of Täygetus, which runs due south, right down to Cape Matapan, to our east. A descent of two hours brings us to Lalâ, where we pass the night in a solitary cut-throat place. These sleeping places are indeed queer places: granaries sometimes; barns often, or chambers where only the very tired traveller could sleep: skylights in their roofs, windows with wooden shutters which will not shut; doors without locks or handles; floors so perforated through one can see the horses feeding in the stables below; above ceilings of planks, on which the family sleeps, cooks, and snores; pigs, if one's room happens to be on the ground floor, find their way among the baggage, while cocks and hens roost not as far from your head as might be desired. The tortoise abounds in these parts, and often is big enough for Apollo's lyre. Magpies fly in flocks, eagles and the buzzard are occasionally seen. It says something for the progress of education in Greece that in this obscure village, the Iliad of Homer is taught and studied in the school. We look out on the bright moonlight, and reckon that when we reach Ithome, we shall have the full moon for our night's company. Next day we descend from high lands, and what a descent: the paths, like beds of rivers, are covered with boulders, constantly it seems to us as though our next step must land us headlong upon the roof of a house, or over the walls among the drying linen, or down among the pigs, gourds, or bunches of grapes laid out in the sun. We pass a French encampment of road makers, who are employed to make a road from Kalamata to Sparta, a tough job for them, judging by what they state that already three months have passed in surveying the ground. One of these gentlemen join us, and tell us much about Greek crime. There is not a day passes, says he, pointing to Kalamata, whereon two or three people are not murdered in vendetta or on account of sudden quarrels over gambling at cards. The murderers flee to the mountains, and live by robbing villages and market people going to and from Mistra. The sentence for murder, as a rule, does not exceed three years. The Demark dare not give longer punishment, did he, his life would be in danger from the relatives of the prisoners. Crime is treated by the Government with far too weak a hand. We reach Kalamata, and find little interest in the town, but the country round is superb. The bay of Messenia is protected from the north wind by Täygetus open to the south, while the east wind is stopped by the beneficent rampart of hills, so that the winter is unusually mild.

In the monastery of Ithome we find kind hospitality from the monks. We found our way here by Nisa, passing much traffic, merchants taking fruit and wares to Kalamata. Here the cactus grows literally in hedges and the fruit of it is much eaten. The olive too flourishes better in the plains of Messenia, than in any other part of the Morea. The peaches, by the way, are superb. Nisi, under Venetian rule, was well fortified; considerable ruins of the fortress remain. It is not desirable to sleep here, for lying in the marshes it is a most unhealthy place. The French army, during its occupation of the Morea, suffered fearfully from fever at Nisi, and were well-nigh exterminated by it and the savage descents the troops suffered from by the Maniotes.

The Monastery of Ithome, now called Mount Vourkûno, dates from times of Byzantine rule, has been altered and restored, so that, save for two very finely carved capitals in the church, which stands in the centre of the court of the building, little of the older work remains. The monks are curious about our Irish difficulties, much interested in Mr. Gladstone, whose health they drink at dinner. Indeed, it may be mentioned, that Lord Byron and Mr. Gladstone are the names of men who inspire more interest here than any other, for obvious reasons. The monks number twenty. As all the young Greeks are bound to serve three years in the army, the monasteries, so useful and hospitable to travellers in most parts of Greece, are fast disappearing. A rocky pass leads up Mount Evan, in a north-west direction, and we find the eastern gate of the Acropolis of Ithome. Here there are not many remains; the wall is but one stone in thickness. At the eastern gate it is evident, must have been sentinels posted to watch the sides of the opposite hills against the descents of the Spartans. The western portion of gateway remains. Six feet above the land level is a window for an outlook. From here the walls built by Epaminondas, branch off in a westerly and northerly direction. They embrace the eastern side up to the cone of Acropolis. Westerly the walls dip down into the valley for some two miles, reach over hill and dale again in a northerly direction, and meet the eastern wall near the summit of the Acropolis. These outer walls and fortifications are at least six miles in circumference. Passing up the mountain we trace debris of inner walls, and reach the summit of Ithome, 2,270 feet above the sea, and find an interesting Byzantine Monastery, built upon the site of the temple of Jupiter Ithomotas. It is entered by a wide gateway, constructed like that of Mykene. On the left is the church, a small building covered with ancient frescoes, their colours are still fresh. A hermit takes charge of the church. He subsists upon charity from the Monastery of Vourkûno. The old man gathers wood in the autumn for fuel, as the snow often in winter lies four and five feet deep on this exposed point. A few dried grapes and bread he lives on. Covered in rags, turned deep red by exposure, his long beard and hair unkempt, he reminds us of Tennyson's 'St. Simeon Stylites.' Leaving this lonely one to his superstition, we find the path down the steep hill sides to Mavromati 'black spring.'

In our descent from the Acropolis many traces of Greek masonry we pass. Colonel Leake's map, appended to his travels, will greatly aid the traveller to understand the plan of Messene, and to identify the several remains existing, and the sites of others mentioned by Pausanias.

At Mavromati is a hostelry, where decent wine and bread may be had. Fortunately, this is situated exactly opposite the famous fount named Clepsydra, or (hidden water), so called, possibly, because it lies hidden under the hill side of Ithome and her Acropolis; so that even from the highest point of the natural fortifications of Sparta, the mountains of Täygetus, the whereabouts of so valuable a material as a constant flow of water for her enemy out of the hill side, summer and winter, was unbeknown to the enemy of the Messenians. Indeed a beautiful scene there was around the fountain: all the barriers disappear between the centuries dividing us from the times when other women of a purer race came to get water, as these of corrupt race do now, yet what we see must be so like what they saw ages ago. The Papos brings his lamb, sacred in Greece, to the priest. First, the emblem of purity drinks from the stream of water that had refreshed many a weary warrior and patriot in troublous times; then, having filled his bucket, the sacred priest of the people departs, the villagers making a way for him respectfully.

Leaving a scene where every element of natural life is evident—the pig selfishly rooting out his fellow who has found a cool bed; donkeys with the air of wisdom gaze into space; hungry dogs, anxious to steal, are fearful of the consequence; lean cocks and hens, with the quack of ducks contested with the clack of women's tongues, which in Greece now wag as freely as they did in Homer's time, and perhaps not alone in Greece,—we ride to the remains of the stadium, the theatre, and several temples, and to the keramicus of which Leake makes no mention, it occupies one or two acres of ground, several tombs are visible. The stadium faces north and south. The east side is very complete, shewing terraces for spectators; around the whole length of it was a colonnade, the columns of which were separated by ten feet, their fluting is flat, not incised. At the end of the stadium stands a small Doric temple. The masonry of the theatre is superb, the setting of stones perfect. An hour's ride through the fields—we leave traces of buildings to the right and left, and reach the gate called the gate of Megalopolis. The portal looks north, some eighteen feet in width; from this we enter a circular chamber, built of finely-cut slabs of stone, set without mortar; the lowest range forms a natural frieze; above this is a string-course of narrow long slabs, supporting the squarer cut masses of stones which form the upper part of the wall. The effect of the magnificent chamber is overpowering. Some sixty feet of the ancient paving of the road to the city remains, and many of her towers are preserved, their walls pierced narrowly within, but widening as they gain the outer wall, whereby the guard or watchman obtained a considerable view of the country right and left of him, but was concealed and safe himself. Epaminondas built these walls; no Greek ever subdued them, but Alaric and the Goths scaled them and destroyed the city. For the student of military history, Messene is full of interest; while to the lover of history, the remains of the city of the brave Messenians will prove worthy of a lengthened sojourn. We leave the monastery; the monks bid us God speed. We mount our horses and ride to Bougasi, staying by the way for breakfast in a little valley where a shallow stream finds its way through fresh green lands, under the shadow of small oaks. Here we find a colony of peasants. It is Sunday, no work is done. Groups of women sit in circles relating no doubt the last gossip; shepherds lean on their crooks; pigs and donkeys roll themselves in the cool water. We heard snatches of songs, the tinkling of sheep bells, the rippling of water, the sound of the double pipe made of olive wood, just as described by Theocritus, and have a scene before us such as inspired the pastoral poets of Greece and Sicily. At Bougasi, we sleep in a granary piled with grain and stored with blankets for winter use. Our guide talks of Demosthenes; he is indeed a favourable specimen of his class. The River Pamisus is a broad and rapid stream; above the ford a gradual incline of its bed has been constructed to avoid rapids, which would be dangerous at this point. Traces of Turkish rule abound. The women wear a turban and the yashmak; dignified in their bearing, the peasants here are moral, and would resent the slightest familiarity; their children are reserved and very timid. Liebig and preserved beans make us an excellent dinner, and the wine of the country is good. Our guide loses his cloak, and his anathemas on the head of the thief are strong; he wishes the tomb may refuse the repose of his body, and, that he may wander for ever on the face of the globe without rest and food, this is his charitable desire for him. We leave Bougasi for Paulizza, pass Tragói, over many steep and dangerous places on foot, leading the horses. At mid-day we find shade under plane trees on the banks of the Neda, which river, next to the Meander, is the most circuitous in its course. This part of Arcadia is very well watered, and should be most productive; the hillsides are well covered, indeed they are umbrageous. Looking back, we have not lost sight of Ithome, as a sentinel in the plain. Täygetus is grey in the morning light, her bristling edge is clear and clean cut against the southern sky. And now we mount the Acropolis of Phigaleia, a thousand feet of stony ground. Storms gather in the valleys, the wild range of hills raise their heads over ominous cloud-gatherings. Nearly as extensive as the walls of Messene, the walls of the Acropolis of Phigaleia offer interest to the student of military architecture; they are inferior, however, to Messenian work. Many of the numerous towers still stand; these are for the most part circular, and defend the city on the edges of steep precipices. The little town of Paulizza is upon the site of the ancient city of Phigaleia; it is partially surrounded by walls, which answer by their position to the description of Phigaleia by Pausanias.

To Bassœ, we retrace our steps by Tragoi, along the west of a stubborn hill. The country becomes more and more rocky; slippery too for the horses are the stony ways. Oaks are abundant; for wildest mountain scenery nothing can be grander. The air is still, save for an occasional shout of some shepherd on a hill top, answered by his fellow upon another. The silence is profound as we climb the rugged sides of the mountains, and wend our way among the tangled wind-blown oaks. Hidden away for centuries, the temple of Apollo Epicurius was discovered by English and Germans in 1812. It was built by Ictinus, the architect of the Parthenon of Athens, originally one of the richest temples in the Peloponesus, was when first seen by its discoverers, much as Pausanias saw it. As a thank-offering to Apollo, for staying the hand of a grievous plague, the people of Phigaleia dedicated the temple to the Helper. Built of grey limestone, originally, no doubt, covered with fine stucco, and highly coloured, far away from any habitation, hidden away in the recesses of the hills, this shrine stands a mere shell now, once indeed, covered with ornament and colour inside and out. The celebrated frieze representing the fight between Theseus, the Amazons, and Centaurs, now in the British Museum, is contemporary work with Phidias, and probably the design of it emanated from his workshop, though its workmanship is likely to have been local. The energy and style of design is of the grandest, and for dramatic invention nothing in Greek sculpture is finer. The hill upon which the temple stands is called Cotylion, according to Pausanias. There were other temples in the neighbourhood, of which no trace remains. Towards Ithome and the gulf ot Coron we look on the one side, on the other to the gulf of Arcadia and the Strophades. Through drenching rain we ride down the mountain to Andritzena, where we lodge fairly, and by way of Mazi we go on to Olympia. Passing out of the wilderness of Arcadia, into the soft dreamy Elis, is indeed a contrast. There is nothing in all Greece more lovely than the valley of the river Alpheus. Wooded slopes, soft undulating lands, meet us on every side. Mazi is an unhealthy village, feverish, and a night there should be avoided. Rich in currants and vines. This region is the most rich of the Peloponesus. The morning finds the whole valley steeped in mists, which the wind blows in garlands round the pine trees, they creep up the valleys, form little cloudlets round the hill tops, and are expelled at last by the heat of the autumn sun. With no common emotion we follow in the footsteps of past generations. We think of Endymion, beloved by the morn, as tradition says of Epeus, the first victor in the Olympic contests. We remember Augeas, some say the son of Apollo, whose cattle filled the land, and destroyed the cultivation of it, and of the labour of Hercules to purify the country of his pest. We are soon to find ourselves on the site of those games which gave us Greek history, because they established dates, which prevented the Greek from becoming degenerated by Oriental luxury, and which were stimulus alike to the art, poetry, and character of the Grecians. The olive and the Acanthus crown were the prizes for which all Greece contested. Running the foot race, driving the chariot races, the contest of the cæstus, wrestling, boxing, and of those races carrying shields, were some of the manly exercises which developed strength of body, and enlivened moral endurance and emulation. Statues to the victors were made by the celebrated sculptors of the time; poets sang their praises; musicians tuned the lyre to add their note to a chorus of emulation.

The temple of Jupiter appears,—that greatest Doric temple in all Greece, wherein once stood the famous statue to the god, that chief work of Phidias, the sculptor.

The temple of Juno is uncovered, and herein is the place told of by Pausanias,—that famous work by Praxiteles,—where the statue of Hermes was found, and standing in a shed hard by, we see this miracle of art, unlike the archaic grandeur of the Parthenon figures, lacking their strength. We find, on the other hand, perfection of modelling, delicate grace of finish, bordering on an effeminate style; indeed, one step more, and this breathing body of marble will become affected as Canova's work is—mannered and uninteresting.

The Germans have carried out the excavations of this interesting city with their accustomed purpose, vigour and care. Of the works by Pæonias and Alcamanes, both contemporaries of Phidias, his pupils and his rivals, it is needless to say much has been said and written; these formed the pediment and frieze of the temple of Jupiter. Vigorous in design they are, but coarse in their execution;

interesting to the student of sculpture as revealing the very rapid growth of naturalism upon the yet remaining Archaic restraint of better contemporary sculpture. Pausanias saw the statue of Jupiter: he tells us that, at the foot of the statue was written, Phidias the Athenian, the son of Charmidas, made me. The architect of the temple was named Libon, a native of Olympia. The roof was of Pentelic marble, cut in the shape of tiles. Of what this temple contained can be gathered from the Elegiacs of Pausanias.

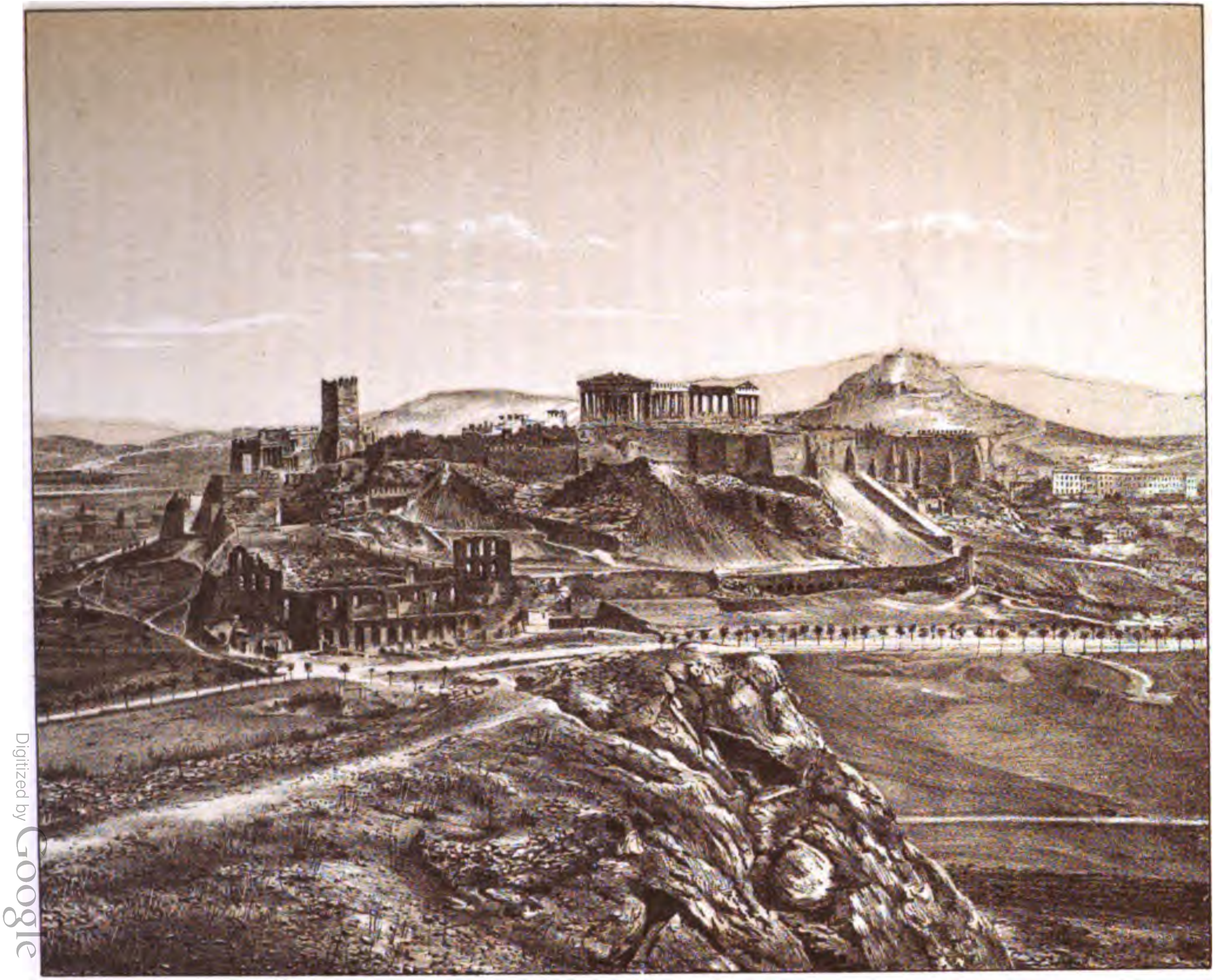
Upon the eastern pediment stood the works of Pæonius, of Thracian origin; upon the western were the sculptures of Alcomanes, an Athenian. These sculptures lie in the shed. They represent the Lapithæ fighting with the centaurs at the Marriage of Pirithous, Theseus revenging himself on the centaurs.

Pausanias says—"But the god sits on a throne of ivory and gold, and is adorned with a crown on his head, made in imitation of a branch of the wild olive tree. In his right hand he holds a victory, also of ivory and gold; his left hand wields a sceptre of beautiful workmanship, and in the composition of which all metals are blended. The bird which sits on his sceptre is an eagle. The sandals of the god and his robe are of gold. On his robe various animals, and of flowers the lily is represented. The throne itself is variegated with gold and precious stones, with ebony and ivory, and is adorned with pictures of animals and statues," and so on.

The description by Pausanias of this, probably the greatest work of the greatest sculptor, is too long to quote. Enough be it said, what were those days when Art had free hands, when the people worshipped, saw and felt her divine influence? Where is that love for the divine expression through his hands of the love of man's beauty? The Temple contained pictures by Panæus, brother of Phidias. These related to Hercules, Theseus, Prometheus, Ajax, Achilles, and Penthesilea. Of that miracle concerning the prayer of Phidias asking if his work were pleasing to the God, it was said that in answer to it the pavement was struck by lightning. Among other remains of ancient art in the shed, which serves as a museum, we notice the bronze head of a boxer; of it may be said that portrait work can go no further than does this realistic work, upon every line of which the finest style and taste are expended. And we must notice a bronze foot, whereon the artist has told us how he loved to follow the delicate planes of nature, and sought to represent her varieties of surface in a spirit of devotion and selection. And this leads us to some consideration of the manifold enterprise of Greek art. From the rude wooden block used as a terminus, to complete accomplishment of design, the whole Greek mind is shewn, alike in its plastic art as in its literature; religion and philosophy. First the myth, then the religion, then the philosophy—the thought, the form, and the substance—fairy stories, the childish literature; religion, the formulating creation of divinities upon these stories; and philosophy the reasoning concerning these for the advantages of man's life, follow in natural sequence.

Then the overwhelming force, nature, drowns every preceding emotion. A brutal naturalism beats down ideas. Structure, incompletely known, flaunts her science, and leaves the mysteries of the soul and heart in the shades. On the apex of the triangle we find Phidias, and to Athens we go for the atmosphere under which he worked. After him sculpture went the natural course of all things, having attained a supremacy. Rome came with majestic buildings, but Rome had to go to Athens for her inspirations in the plastic arts. Even the Hermes of Praxiteles shows a decline of the highest powers of art. This statue is less allied to the old than to the new order of observation. It is the very terminus, dividing us from archaic art, the step which marks a decline. A decline gradual and slow, slower than was the ascent of art up to the highest level of it. This is digression, yet it is valuable, for our considerations are removed from the Altis of Olympia to Athens, whither we wend our steps by Pyrgos and Patras, down the gulf of Corinth again, past Ægina to the Pireus, from the ancient port we drive, for let no one go by train from the sacred port to the sacred hill, though by so doing he may be nearer the walls which wound by the Illysus from Athens by the sea. On first sight all looks so dusty, so unlike the memories of the extending branches of a great city; but as we proceed fragments of the Keramicus appear, after we have passed the Temple of Theseus, beautiful and golden in its armour of age, earlier a little than the present remains of the Acropolis buildings; that is earlier than those commonly seen and known. Recently so many remains of pre-Persian invasion are unearthed, that the student of art and archæology has but to search and he will find.

He will see the foundations of the Temples of Athens, and tinted statues throwing such clear light upon a much disputed point, decided now for ever, let us hope. And fragment on fragment of precious relics of the Attic past are let into the walls of the Propylæa, passed over too hastily by the ordinary traveller. We stand between that ancient row of eight columns, including the two belonging to the portico, and between the six Ionic columns supporting the vestibule of the Propylæa or gate of the Acropolis—here a moment we pause, and stand back between the shafts of the mighty building to watch procession after procession of ancient history pass before us. Pericles and Aspasia, Phidias and his companions, Socrates, Plato, ATHENS.



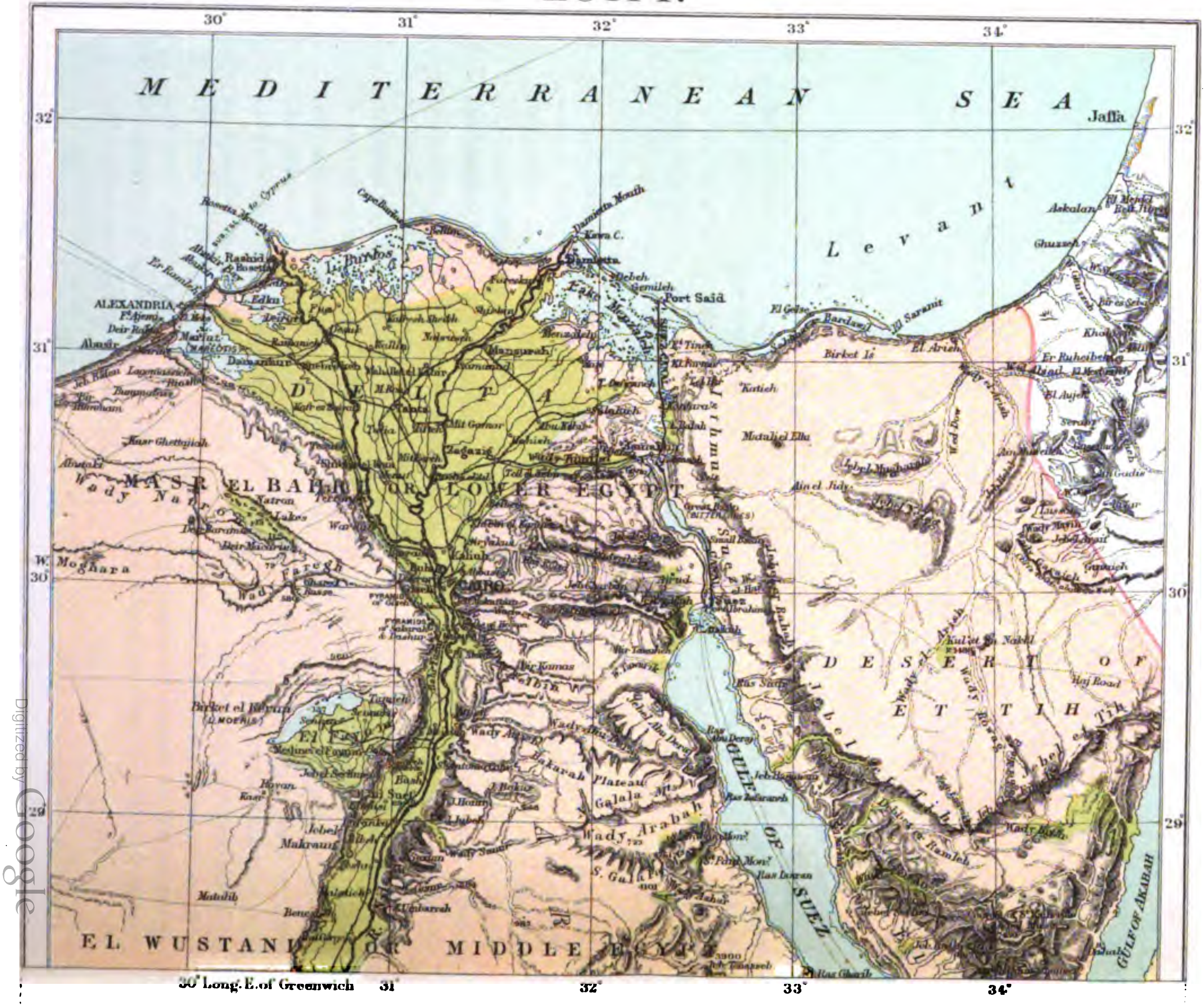
GENERAL VIEW

probably, too, Saint Paul, pass as phantoms over our minds. Saint Paul, who spoke from the Mars Hill condemning the gods made with hands; there we can imagine him standing pointing to the figure of Pallas Athene, just visible above the walls, and through her image denouncing the ancient myths and idolatry in his passion to promote the interests of a new order. But as interesting, or more, to some of us, as we think of the past, is the procession which passes of men, women, soldiers and heralds, commendating Pallas Athene. Crowds fill the whole top of the hills; a bright spring day dazzles; colour and light make up a panoply of glory; the bright and trained youth of Athens, fresh from training, full of life, pass; women in the bloom of youth chant the hymn of praise to the virgin goddess, while they bear their sacred burden of a newly-embroidered peplos to the shrine of Pallas Athene. The heralds marshal the whole procession. Warriors mounted seven abreast canter by, restraining their too eager steeds. Sacred unctions for sacrifice are carried in vases by stately maidens. The marble rings with the echo of the passing pageant. The Acropolis is alive again once more. Yet for us it is a dream; all this of that glorious time when art went with the people—was a part of her culture and religion—is dead. And wakened, we are again in the 19th century, lost to all beauty, needing none. Welcome, indeed, the dream of a past, quite lovely, but so apart from us, so cut off from the current sympathies of our majority, that who can enter into it but those who love it and would that something akin to it might bloom again?

This cannot be, and we let ourselves wander over the sacred hill and see the Porch of the Erechtheum, sacred to the olive tree brought to Greece by Athene. For this sacred emblem and for the preservation of it the Porch was built. Far more intricate is the history of this temple than of that vast pile of marble gathered from Pentelicus and moulded into the most refined shapes by the genius of Ictinus, and the imagination of Phideas, the Parthenon.

We wander to the Museum of the Acropolis and see the coloured remnants of marble—earlier these than Phidian time—daintily coloured, eyes, eyebrows, hair and garments. The Greeks knew well that to place against the highly wrought interiors of their temples bald white marble statues to gods, goddesses or heroes, they would do a religious, as an artistic, indignity to their deities, so they coloured their statues with as near a similitude to life as they knew. Gold, silver, even precious stones, together with strong red, blue and yellow, were used as adornments of the temples. So raw marble would indeed have appeared poor and ghostly under such magnificent settings. So the tinting even the colouring of statues became a necessity to avoid poverty of contrast. Examples enough of this treatment have recently come to light. We gather from such clear sources of information, to be gathered in Athens, together with the rich descriptions of Pausanias and of the ancient Homer, that the Greek knew how to pile luxury on luxury where his superstition or religion was concerned, however humbly in the earlier time the majority, or the well-to-do lived. The influence of the Greek drama over the politics and religion of the people is seen on all sides. Every state had its theatre—not a theatre according to modern ideas, but set apart in solemn worship. The theatre called after the name Dionysos, around whom hang the mists of dramatic creation, as we now see it is a restoration of the Roman Hadrian, but the site is that of the representation of the Sophoclean and Æschylean dramas. The ancient theatre was of wood, save the tiers of seats. We sit in the chair of the Archon—a jumble of ancient and Roman design—and look towards the stage, figure the masked actors, who declaim before such a scenic background as no other theatre can possess. That level line of sea, with silver islands rising into the summer light, is indeed a fit background. What wonder, indeed, that the pride of that populace behind us, a mountain of souls, intelligent, receptive and critical, rose and fell as their country was exalted or depressed. From the scene of that living stream of sound, and exaltation of enthusiasm, we wend our way to the Keramicus, and wander among the tombs. What have we here? A series of soul-touching designs, wherein many of our most modern associations are pre-figured. Plato had left behind him far deeper reasonings as to the immortality of the soul than any gotten from the writings of the Old Testament, and such sculptures remaining not only in the Keramicus, but preserved in many museums of Europe, are for the most of them of a later date, when ideal treatment of a conscious after-life and of personal recognition had become more or less common. Prior to this we know of few representations of childhood in Greek Art, and it is interesting to the historian who is concerned in religious analogy, to study the groups of women and children, young men and old, passing away through gates of eternity with sure certainty like the Christians of a meeting again with the friends left without the gate. Little enough have we said, little enough explained. Megara and Eleusis, Delphi, Marathon, tell us deep stories of battle, myths raising kingdoms of art, religious oracles claiming the voice of God, by mystic whisper, once a pulse of life between natural sounds and man's receptive imagination, instincts, and rude ideal, created by his yearnings for understanding, his longings to find a voice where no voice was, Greece created her mythology, art, and philosophy."

EGYPT.


MEDITERRANEAN SEA
Levant
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Ghuzzeh
ALEXANDRIA
Abukir Bay
Rashid
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Cape Burlos
Damietta
Damietta Mouth
Lake Menzaleh
Port Said
El Arish
Birket Is
Mansurah
Tanta
D E L T A
MASR EL BAHRI OR LOWER EGYPT
Natron Lakes
Wady Natron
Moghara
Wady Faregh
CAIRO
PYRAMIDS of Sakarah & Dashur
Zagazig
Wady Tumilat
Isthmus
Suez Canal
Great Bitter Lake
Small Bitter Lake
Suez
Katieh
Jebel er Rahah
Ain el Jidy
Kul'at en Nakhl
Haj Road
DESERT OF ET TIH
Jebel et Tih
Debbet er Ramleh
Wady Arabah
Galala Mts.
Plateau
GULF OF SUEZ
GULF OF AKABAH
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El Fayum
Medinet el Fayum
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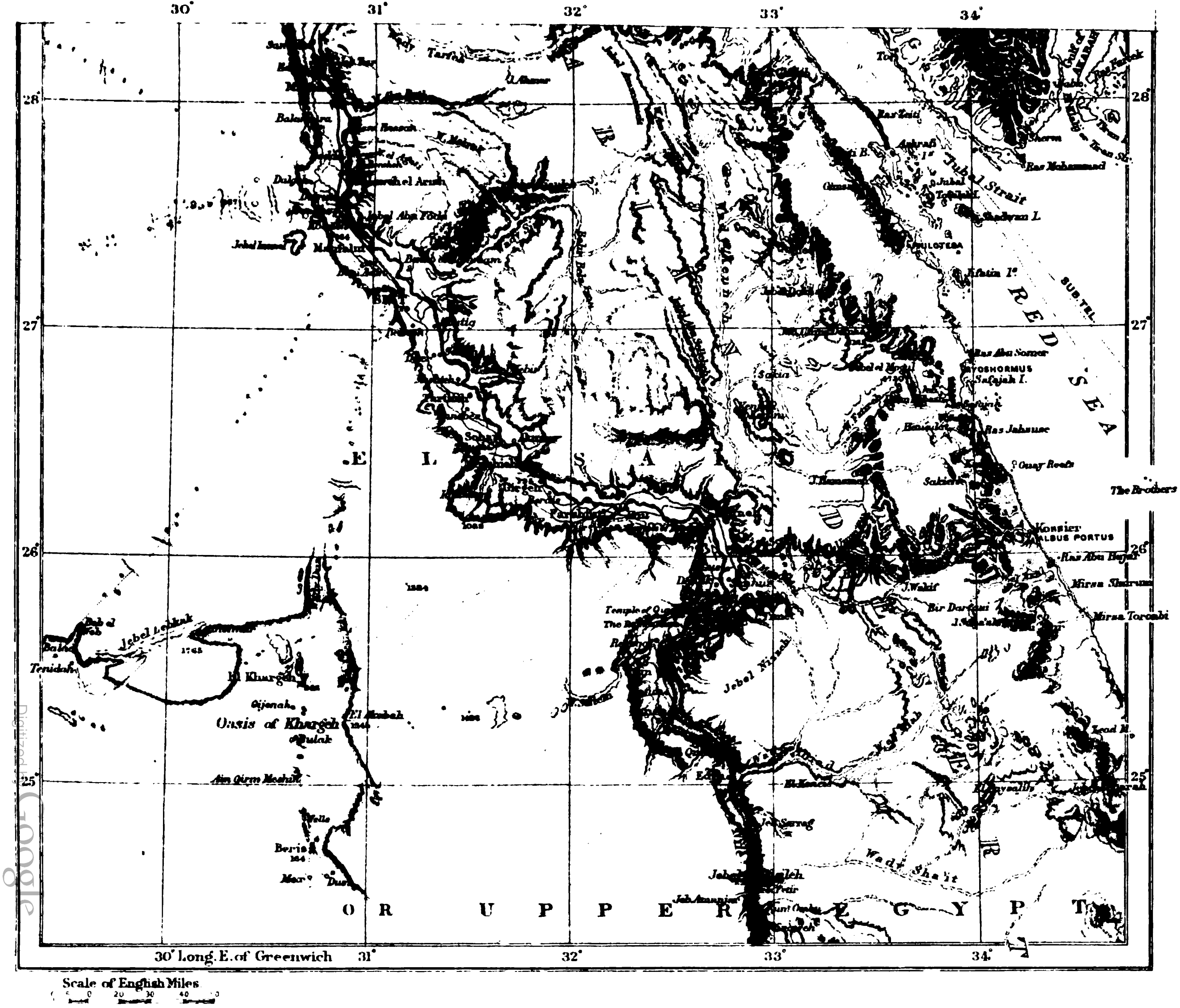
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Gulf of Akabah
Ras Fartak
Tor
Ras Zeitl
Ras Mohammed
Jubal Strait
Jubal I.
Shadwan I.
PHILOTERA
Jiftin Iª
Ras Abu Somer
MYOSHORMUS
Safajah I.
Ras Jahause
Quay Reefs
The Brothers
Kosseir
ALBUS PORTUS
Ras Abu Hejar
Mirsa Shuroum
Mirsa Torombi
J. Wakif
Bir Dorfaui
Jebel Nizzah
Jebel Abu Fodah
Jebel Imaul
Oasis of Khargeh
El Khargeh
Gijenah
Bulak
Ain Qirm Meshih
El Muhah
Berish
Jebel Lekkak
Tenidah
Temple of Qus
Wady Sha'it
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Jebel Abu Seffeieh
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CHAPTER XI.

THE SUEZ CANAL.

LAKE MENZALEH.—PORT SAID.—IN THE WAR OF 1882.—THE CANAL OFFICE.—THE DESERT.—THE MIRAGE.—THE CHANNEL.—PILOTING.—KANTARAH.—EL GUISR.—LAKE TIMSAH.—ISMAILIA.—The SERAPEUM.—THE BITTER LAKES.—CHALOUF.—PORT TEWFIK.—TERREPLEIN.—HOW THE CANAL IS WORKED.—THE TOY.—OLD SUEZ.—THE EXPEDITION TO SINAI.

ALL along the northern coast of Egypt, from what used to be called the Phatnitic Mouth of the Nile, near Damietta, to Port Said, a distance of some thirty miles there is a narrow sandy shore, supposed, though on the Mediterranean, by some writers to be the site of the Crossing of the Israelites, and very dangerous for passengers in a changing wind. This narrow beach divides the Mediterranean from Lake Menzaleh, a vast half marshy lagoon of brackish shallow water, dotted with islets, and possibly destined in the near future to contain some of the most valuable and fertile land in the world. At present it is the common fishing ground of hordes of very wild Arabs, and of flocks of pelicans, flamingoes, and ducks. The embankments of the Suez Canal cross the lake, and that portion which lies eastward towards the ancient Pelusium and the road into Palestine, the fighting ground of Egypt and Assyria, is now dry.

Port Said is not seen till we are just upon it. The reclaimed sands on which it stands are not more than a few feet above the level of the Mediterranean. In rough weather the great waves seem as if they must flood the town, but the beach is wide and the sea very shallow for a long way out. The first object sighted is the lighthouse, 175 feet high. The ship lies close to the front row of houses, probably looking right up the principal street. Unless the delay is likely to be long there is no occasion to land, as there is very little of the picturesqueness of the East in Port Said. The traveller is beset by a horde of beggars of all nations, and can examine nearly every thing of special interest in from five to ten minutes. Probably a few Arabs in their native dress, a woman or two in her dark blue gown and veil, and perhaps a camel will be among the most memorable rarities to be seen here.

At the time of the occupation of the Canal before the battle of Tel el Kebeer, as Mr. Charles Royle tells us in his *Egyptian Campaigns* (i. 262), H.M.S. *Monarch* was so moored off the town that her forward turret guns commanded the main street leading to the quay, while the *Iris* was to seaward, where she could shell the beach and the Arab quarter. "At eleven on the night of the 19th (August, 1882), the ships' companies were called on deck and warned that they would be landed at three a.m. The strictest silence was enjoined. So well was this order carried out that those on board the French ironclad, *La Gallissonière*, moored close astern of the *Monarch* and to the same buoy, knew nothing of what was going on." The men were landed from a lighter, which formed a floating bridge, and quietly surrounded the barrack. The sentries on the quay were secured by six marines, and two companies of the same force were posted in such a way that escape from the barracks was impossible. The Arab soldiers appeared to be asleep. There were 160 of them. They immediately piled their arms and surrendered without a blow. "Of the arms surrendered by the Port Said garrison, but one piece was loaded. The military commandant was absent, and the Egyptian sentries were asleep at their posts."

As soon as the ship begins to move past the town she is virtually in the Canal. The offices of the Canal Company are among the last of the buildings. Here an amusing scene took place in the 1882 campaign. "Captain Seymour occupied the office of the principal transit agent of the Canal Company, and a midshipman not more than fifteen years of age was told off with a party of blue jackets to take possession of the company's telegraph apparatus. When the telegraph agent arrived he was forbidden to enter his own office by the small midshipman, who said, with a very good French accent, 'On ne passe pas.' The Frenchman (all the important posts in the Company are filled by Frenchmen), looked at the diminutive object in front of him with dignified astonishment, and demanded 'Qui êtes vous? Que voulez vous ici?' 'Je suis ici pour empêcher le monde d'entrer,' answered the midshipman." The fact that the lad spoke good French was probably the reason of his selection, but it will be remembered that the officials of the company made themselves very obnoxious to the British forces, and were known to be supplying information to the rebels. The fleet and transports—among which was the *Orient*, with the Duke of Connaught and staff on board,—entered the Canal on the 20th August, and it was remarked that among the few that had pilots, one, the *Catalonia*, was run aground near Lake Timsah.

Leaving Port Said, the steamer enters between the long moles that preserve the channel of the Suez Canal, a narrow water-way across the desert, eighty-seven geographical, or about one hundred statute miles in length. The Canal runs first through a wet, flat, sandy plain scarcely higher than the level of the water on the east side, and a little below it on the west side. This plain is the wide swamps and marshes of Lake Menzâleh: wild fowl, including large flocks of white and pink flamingoes, abound; and the thought recurs that these unproductive shallows were once fertile wheat-growing plains watered by the Pelusaic and Tanitic mouths of the Nile. But the sea has invaded and oppressed the rich soil with a coating of sand and salt, burying even the remains of many ancient towns and cities that once flourished there. In steaming through Lake Menzaleh, every one on board watches the wonderful flights and flocks of birds to the westward. Sometimes thousands of pelicans appear sitting so close together that they look like a whitewashed wall at a little distance, and it often requires a strong glass to resolve such a cloud of birds into its component individuals. The spectator is fortunate if a flock of flamingoes rises into the air, because while the flamingo looks white when standing, the under side of his wings when he flies is rosy pink. This is an excellent place to watch for the mirage which is almost always visible in the eastern desert. Sometimes a reflection of the ship itself seems to be sailing alongside.

The Canal has at present an average width of only twenty-five yards, but great improvements are about to be made in this respect. Strange to say, the narrow water-way is found best for large ships, and it is almost always a small one which grounds in the Canal. This is explained when we remember that such a vessel as the *Ormuz* or *Orient* cannot get across the channel, whereas a smaller boat, blown by the wind, or affected by the slight current, or awkwardly handled by her crew, sometimes contrives to block the passage for days together. By way of preventing these disasters, several changes are being carried out. M. de Lesseps (by whose genius and perseverance this marvellous work was carried through), and his colleagues recently traversed the Canal in one of the largest ships which make the voyage to Australia by the Suez route, namely, the *Austral* of this line, and their observations have resulted in a scheme by which in some places the water-way will be doubled, and in others will be widened and deepened, so that the dangers of traffic as at present conducted will, it is confidently expected, disappear. A deepening of the Canal is almost more to be desired than a widening, because the very slow pace, about five miles an hour only, is necessitated by the lack of water under the ship. Every foot of additional depth would add proportionally to the average speed.

At present, ships are piloted on the "block system," except in the great lakes where they can pass each other freely, and steam at full speed. At each of the stations or "gares," there are signal posts, from which steamships are directed to "go into the siding" or "go into the canal," as may be required. A full code of these signals by day and by night is supplied to ships by the Canal Authorities. Vessels provided with an electric projector that can throw light 1,300 yards are permitted to navigate the Canal by night. It is a fine sight to see sometimes as many as twenty "tall grey ships go on" while you wait at a siding, and nothing gives the traveller so great an idea of British commerce as the fact that something like nine out of ten are going to or from England.

It has been found quite practicable to prevent any serious silting of the canal by the desert sand. The washing away of the banks can also be successfully counteracted by facing them with stone and concrete.

The main engineering trouble of the present, is the silting up of the Port Said or Mediterranean entrance. To obviate this, the western breakwater, a mile and a half long, has been constructed to protect the entrance from silting of the mud and sand carried down to the Mediterranean by the Nile. It is probable that much may be done by placing smaller intermediate breakwaters along the coast nearer Damietta.

While waiting in the sidings for other vessels to pass, or for the night, the strange colourings and peculiar aspects of desert scenery will be enjoyed to the full. Even a run on the sands of the desert may be indulged in. The mind will also recur to memories of the persistent attempts of the ancients to have a ship canal across this desert. Necho (B.C. 600) made a canal from Suez through the Bitter Lakes to Lake Timsah, and then west to Bubastis on the Nile. Herodotus describes this work with its water gates, and tells us that vessels sailed through in four days. This cutting became choked with sand, but was afterwards cleared and re-opened by Caliph Omar in the seventh century.

Kantarah "The Bridge" is about sixty-four miles from the Suez entrance. It boasts an attempt at a town and hotel, and is on the most frequented road to Syria.

Between Kantarah and Lake Timsah ("the crocodile," probably from its shape), seventeen miles of narrow canal have to be passed. At the commencement of this there are some difficult curves, and as the regulation pace is slow, it is here that steamers most frequently ground and obstruct the general traffic. The cutting of this part was the hardest piece of work on the canal; the ridge of El Guisr rose from seventy to one hundred feet above the desert and was penetrated with difficulty. This is the one strip of terra firma between the Lake of Timsah and the marshes of Lake Menzaleh. Along this strip is the ancient desert route to Syria; and at the pontoon ferry fully equipped caravans may be seen waiting their turn of crossing.

At Lake Timsah the accompanying fresh water canal turns abruptly away to the west, along the land of Goshen ; and here is situated the town of Ismailia, clustering round a summer palace of the Khedive. This was the centre of the celebrations at the opening of the Canal in November, 1869. The Empress Eugenie, the Empress of Austria and the Crown Prince of Prussia were among the chief stars of the ceremony. The town was planned and built most artistically, but the drainage was so forgetfully executed that it is said to have found its only outlet in the fresh water canal—the mainstay of life in the desert. The consequences were inevitable: it very soon became fever-stricken, and it is now practically deserted. Ismailia in 1882 was galvanised into a brief life of extreme activity when it became the base of Lord Wolseley's brilliant campaign. The canal and lakes were crowded with men-of-war and transports; the town was filled with all the busy needs of an army of 20,000 men. While Arabi and his troops blocked the way into Egypt from Alexandria the British navy seized Ismailia; men and materials were rapidly concentrated ; the army pushed along the line of the railway and sweet water canal; the Egyptian lines of Tel-el-Kebeer were stormed at the point of the bayonet, and Cairo occupied without further resistance in a campaign of three weeks.

At Ismailia the railway leaves the line of the canal; and the desert is entered. From Lake Timsah the cutting goes through Toussoum to the north entrance of the Bitter Lakes a distance of about nine miles, on either hand is the desert. On the right is situated Serapeum railway station, around which may be found remains of many ancient buildings inscribed with Persian and Egyptian characters. The chapel of Our Lady of the Desert commemorates the flight of the Holy Family into Egypt. A neighbouring ancient monument gives to this portion of the canal its name of "the Serapeum cutting." On February 28th, 1869, the Prince and Princess of Wales "let in the waters" to this portion of the work.

The Bitter Lakes widen the surface of water, but the available channel is still narrow, though deep enough for a good speed to be kept up. They are the remains of a dried-up arm of the Red Sea on which once flourished the ancient port of Arsinoe. To the west is seen the verdured line of the fresh water canal that now runs from the Nile to Suez. Behind this rises the Geneffeh range, affording profitable quarries of limestone and marble.

From the Bitter Lakes to Suez the Canal is quite complete with hard banks. At Chalouf the cutting is carried through sandstone, after that to Madama it passes through sand-hills and increases in width ; at Madama the banks are of marl or clay, thence to the Suez entrance it runs again through sandhills. The tidal influence in the southern portion of the Canal extends from Suez to about four miles north of the southern end of the Bitter Lakes, and it is at the latter position that the separation of the salt lake water from the Red Sea water occurs.

As the steamer enters the Suez roadstead, the eye looks over desert that has always been the highway between Asia and Africa. A line drawn north from Suez until it touches the Mediterranean, is the geographical boundary between Asia and Africa. Ahead Mount Attaka rises boldly above the sea to a height of 2,700 feet.

For some reason, said to have been political, M. de Lesseps did not bring his canal through the ancient channel and past the old town: but when about five miles off he turned it eastward, avoiding altogether the head of the gulf, through which the direct road would seem to have led. Thus it comes to pass that the famous Suez Canal never goes to Suez at all, but has had formed for it a port of its own, about three miles from the head of the gulf at the end of the fresh water canal, surrounded with land but partly reclaimed from the sea, and destined, it may be believed, to be one of the great maritime and commercial cities of the world, though at present it only contains the offices of the Canal, a couple of private offices, and the little wooden houses of the pilots. Its official name is Port Tewfik, but locally it is always called Terreplein. The southern offices of the Canal Company are here, on the edge of a green and pretty double avenue of lebbek and sont trees. A tall signal tower shows the state of the traffic by means of balls and flags. In a garden in front is a colossal bronze bust of Lieutenant Waghorn, the spirited projector of the Overland Route, which led eventually to the making of the Canal. It is inscribed to his memory by the company and has on the base a relief representing him embarking at Suez with the mails in an open boat, an incident which actually occurred.

At the Inventions Exhibition at South Kensington there was shown the simple arrangement by which the Suez Canal is worked. It is locally known as "M. Chartry's toy," from its inventor, M. Chartry de Menetreux, the director of the transit department at Port Tewfik. In a silent chamber in the upper storey of the office, on a low table which fills one side of the wall, is the "toy," a narrow trough of metal about fifteen feet long. On a shelf above it are some fifty model ships, each bearing a national flag. About half the number fly the Union Jack. The trough represents the Canal. There are sidings and stations, and the lakes are indicated by larger openings. When a ship passes the office to enter the Canal, one of the little ships is placed in a corresponding place on the toy, and if a ship comes out the model which bears its name is removed to the shelf above, one man constantly watching the toy, and as news comes by telegraph that such a ship has passed such a siding, the model is moved, and orders are telegraphed directing where she is to tie up. These orders are received at the sidings, and signals to the ship's pilot are accordingly run up. Everything is done quietly and without confusion; and telegrams coming every minute are immediately noted by the moving of a model ship on the toy and an alteration of the signal—could we see it—perhaps fifty or eighty miles away.

At Terreplein the quays swarm with the celebrated donkeys and no less celebrated donkey boys, both lively and lusty of their kind. The visitor will be favourably impressed with these specimens of the fine physique of the desert fellaheen, and he will see that in Egypt the dry heat does not prevent the growth of muscles and stamina. Humour is apparently an invariable attribute, and much fun accompanies the scamper from the quays to the "city." Visitors should refuse to mount a donkey which has been galled by the saddle.

Suez itself possesses unique interest as a city of the desert, and as marking the spot where the great crossing place has existed from West to East. History gives successive details of Egyptians, Israelites, Phœnicians, Greeks, Romans, Mohammedans, Turks, Venetians, Portuguese, Italians, French, and English, utilizing Suez in their migrations and their commerce.

The docks and quays of Terreplein are necessarily European in character; but the visitor will find much to interest him in the narrow alleys of old Suez itself. The ornamental lattices are a feature in the house architecture. From behind them womankind may look on the gay world unveiled but unseen:—

> "Spectatum veniunt at non spectenter ut ipsœ."

The Bazaars are thoroughly Egyptian and well worthy of attention. A visit to the desert, including an evening stroll, will give the visitor a sample of desert life and its monotonous surroundings. Westward of the town a fine view may be obtained by ascending a conspicuous mound, on which there is a flagstaff and a ruinous villa, placed there by the late Khedive. The mound is believed to mark the site of the Roman city of Clysma. There are 15,000 inhabitants in Suez and several hotels.

The fresh water supply is by means of a canal from the Nile. The local wells only yield brackish water, which is often offensive in taste and smell though clear as crystal. The whole of the country is slowly emerging from the sea—hence its sterility and saltness. The town of Suez, a seaport in the sixteenth century, has still deep enough water at the Custom House quay on its northern face for the largest of the picturesque sailing *dhows* which come up the Red Sea with coffee, spices, gums, senna, rose leaves, and all the other drugs and perfumes of Araby-the-Blest.

From Suez Bay the steamer enters the gulf of the same name, passing on the east the stunted palm trees of the oasis known as Moses' Wells. A little further south is an isolated mountain known as Jebel Sudr. It was here that Professor Palmer and his companions were murdered in August, 1882. The Gulf of Suez is from ten to twenty-five miles in width. On either hand, mountains, table-land, and bold ridges three and six thousand feet high, challenge admiration, not only for their picturesque outline, but also for their marvellous colouring. To the eastward is the Peninsula of Sinai, on the southern part of which Jebel Katharina, near Mount Sinai, rises to a height of 8,630 feet. To the westward, opposite Jebel Katharina, is Jebel Gharib, a remarkable conical mountain 5,740 feet high.

Suez is the best place from which to make the excursion to Sinai. The long low line of grey hills on the east, across the Canal, is Jebel Raha, the "Mountain of pasture," and flanks Badiet el Tih, or the "desert of the wanderings." The peaks, only visible in clear weather, in the background form Jebel Moosa, the "Mountain of Moses." There are few indeed who would not wish to see Sinai, and there is very little difficulty in the journey. All the arrangements can be made at Suez. The dragoman, whom you can engage there, does everything for you. The word "dragoman," with which you have so much occasion to become familiar in the East, means primarily an interpreter. But he is much more. He hires camels and camel men, according to the number of the party; he provides horses for those who prefer them; he has tents, fully furnished, ready to spring up from the desert at his bidding. In short, if you make up your mind to go to Sinai, you have half accomplished your purpose when you have engaged a dragoman. The time required for the excursion is about a fortnight at the least, during which you will literally lead the life of an Arab, travelling on a camel and resting in a tent, drinking water from a skin, and eating at a table spread in the open air. The experience is a pleasant one, if you take care not to overdo yourself during the first few days; but accustom yourself gradually to the camel's pace, and remember that a strain or bruise acquired in the beginning of the journey will have no chance of mending till the end.

It is not necessary to enlarge here on the sights to be seen in a visit to Sinai. The Convent of St. Katharine is at the foot of the mountain on which Moses is believed to have received the Commandments: and here the visitor will be received as in a hotel, and all the wonders of the place pointed out to him. He will climb to the summit of Ras Sufsáfeh, that he may find himself standing where Moses stood; and he will endeavour, with more or less success, to identify for himself, in the magnificent landscape spread at his feet, the exact scene of every event described in that portion of the sacred narrative which relates to the giving of the law ; and all the surroundings enthral the spectator, and give wonderful vividness to his conception of the scene described in the Book of Exodus, when "the voice of the trumpet sounded long, and waxed louder and louder," and "Moses spake, and God answered him by a voice" (Exodus xix. 19). As usual in Bible lands a vast incrustation of ecclesiastical miracles and legends are superadded to the scripture story, and these may be learned in the Convent of St. Katharine, which will be the traveller's halting place during his visit to Sinai.

CHAPTER XII.

FROM SUEZ TO CAIRO.

EGYPTOLOGY.—SUEZ.—ISMAILIA.—TEL EL KEBEER.—A TIMELY COMET.—JOSEPH AND MOSES.—*ZAGAZIG*.—THE SACRED CAT.—THE DELTA.—THE FELLAHEEN. —THE INUNDATION.—CAIRO.—THE NILE.—THE PYRAMIDS.—THE SPHINX.— THE BOOLAK MUSEUM. — THE ROYAL MUMMIES. — THE BAZAARS. — THE CITADEL.—ISMAILIA.—A WARNING.

THE tourist who comes fresh from Australia or New Zealand and wishes to see the wonders of the Old World cannot do better than begin with Egypt. This is especially the case if he happens to have a taste for history, or a taste for art. The earliest history of which we know much is that of Egypt. The oldest works of art which have come down to us were made by the ancient Egyptians. There are no writings elsewhere in the world which are known to date before hieroglyphics. All the great pictures and statues we shall see in Europe, all the beautiful buildings, must be traced to beginnings on the banks of the Nile thousands of years before any of the other peoples inhabiting the Mediterranean shores had attained civilization. All our alphabets and mode of writing can be shown to take their rise from the hieroglyphic forms first used to record their ideas by the ancient Egyptians. Of late years the researches of scholars have been rewarded with a success which was long denied to them. Frenchmen and Germans are engaged in an amicable rivalry in the interpretation of old inscriptions and the discovery of fresh historical treasures. Unfortunately it has not been found possible to awaken much interest in Egyptian archæology at Oxford or Cambridge and foreign universities have long distanced ours in a branch of knowledge the foundations of which were laid in England and by Englishmen. The study of Egyptology would be admirably suited to the universities of Australia, which would find an open field unoccupied by the older institutions at home, though even better calculated than the study of ancient classics for opening the mind and cultivating the mental powers.

Apart entirely from any dry or scientific view of the subject, a visit to Egypt offers attractions to the modern traveller of the most varied and fascinating character. Every one has heard of the pyramids. Every one has read the *Arabian Nights*. The pyramids stand in sight of Cairo, the capital of Egypt. The scene of half the Thousand and One Chapters is laid in its streets. The winter climate is the most perfect for almost all classes of invalids. Modern civilization has penetrated so far that we may make the whole voyage to the second cataract—nearly a thousand miles from the sea—in a steamer, or partly by steamer and partly by rail, while hotels quite equal to those of Europe exist at Suez, Alexandria, Cairo, Thebes, and other places. The novelty of mixing with Orientals, of coming into direct contact with oriental life, of hearing a tongue so utterly unknown to most of us as Arabic, of witnessing the exercise of Mohammedan devotion, and of observing the character of a civilisation older than our own, yet in every respect different, is an experience in itself so interesting and so strange, that it is not possible to imagine any better embodiment of the doctor's favourite prescription, "change of air and scene," than a visit to Egypt.

There is little to delay us at Suez, though it may be necessary to stay a night at the hotel, as there are only two trains in the day to Cairo. If the evening is fine (and are not all evenings fine in Egypt?), we may mount to the roof of the hotel and see the sunset. Below us is the town, with the harbour, the flat-roofed houses, the pointed minarets, from which blind men with stentorian voices are calling the faithful to come to prayer; the shabby white-washed mosques; and beyond them the yellow desert, the low pink hills, the deep blue sea, nowhere of a more lovely colour than in the Gulf of Suez; and, as a back-ground, the fine bluff heights of the Jebel Attaka. Close to the hotel is the little house with an outside stair, in which General Buonaparte lodged when he was at Suez, in 1798. If we look to the north, we can trace for many miles the winding course of the great canal, marked here and there by the tall masts of a steamer going to or coming from the Mediterranean. As the sun sets those of the vessels which have no "search light," wherever they may chance to be, are moored for the night, which comes on rapidly without the long twilight of other skies. The bazaars at Suez are filthy and narrow, and there is little to be found in them worth the buying, yet, if time permits, we may here gain our first impressions of eastern life, and first hear the cry of "backsheesh," with which we are destined to become so familiar before we have gone far into Egypt.

Though Cairo is only about sixty miles in a direct line from Suez, the railway passes round by Ismailia and Zagazig, thus making the journey a long one.

The train is very slow, and the carriages by no means too comfortable, with windows which let in the dust, and doors which will neither shut tight nor open easily. On our right, as we steam out of this station is a high mound surmounted by a wooden half-ruinous villa, brought hither from Norway for the opening of the canal. The mound marks the site of the Roman Clysma. At its foot were buried the soldiers shot by Buonaparte, in 1798, "pour encourager les autres." At the opposite side of the line is a curious little domed tomb. It marks the grave of a great Sheykh, one of the Erbaeen, or forty original supporters of Mohammed. A little further the line bends to the right round the Victoria Camp. The first fifty miles or so are along the desert, with fine views here and there of the Canal, and as we approach Ismailia, of the great Bitter Lake and Lake Timsah, both of them fine sheets of salt water, and only wanting a little more vegetation on their shores to be really beautiful. Ismailia was for a time expected to become a pleasant seaside or lakeside health resort, and had good hotels; but some years ago, owing to the carelessness of its builders in allowing the drainage to filter into the canal on which the town depends for fresh water, an outbreak of fever occurred, of such virulence that the prosperity of the place was suddenly but irretrievably ruined. During the recent war it became the base of the British operations, and Lake Timsah was crowded with men-of-war and transports. One of the first stations we reach after we leave Ismailia is Tel-el-Kebeer, "the great mound," which is supposed to cover the site of one of the "treasure cities" built by the Israelites of the Captivity. Here Arabi's troops were finally defeated, although they had raised great entrenchments. The battle commenced very early in the morning of the 13th September, 1882, when the British troops under Sir Garnet Wolseley (now Viscount Wolseley) left their camp at Kassasseen in strict silence, and marched by star-light on either side of the Canal, which we see from the railway. The rebels' chief entrenchment was to the right of the line. In the General's despatch he says the enemy were completely surprised, and it was not until one or two of their advanced sentries fired their rifles that they realised that the British forces were upon them. The works, which are now almost obliterated by the drifting sand, were speedily lined with Arab soldiers, who fired at our advancing lines, made dimly visible by the dawn, and by the remarkable southern comet, (b) 1882, which appeared above the eastern horizon, and deceived the combatants into an idea that the sun was rising. The victory was soon declared for the British forces; after fighting for twenty minutes the Arabs fled precipitately, their general, Arabi, having already set them the example and run away, literally, without his boots. (See Royle's Campaigns, i. 325). The

English loss in killed and wounded was 459, the Egyptian loss being set down at about 2,000. The whole rebel army was dispersed, the Indian Contingent, marching along by the course of the railway and canal, twenty-five miles, to Zagazig, without a halt, took that place at 4 o'clock in the afternoon, and captured five trains which had been filled with soldiers, who disappeared immediately. Cairo was taken on the 14th.

Modern research has been very busy with the history of Joseph, the Captivity, and the Exodus. Joseph is believed to have come into Egypt during the reign of a monarch who was one of the last of a long line of foreigners, the so-called Hyksos, or Shepherd Kings, who dominated the country, especially that lower part of it which we call the Delta (because it is triangular in shape, like the fourth letter of the Greek alphabet), after the time of a great native royal family, known in history as the Twelfth Dynasty. So long are the periods of Egyptian history, that it has been found convenient to refer to different epochs by the number of the dynasties or royal families who successively occupied the throne. Mena, the first king of whom we have historical knowledge, founded the first of these dynasties. Joseph's brethren, then, were settled in the eastern valley or arm of the Delta, along the banks of a canal which even at that early date ran from the Red Sea to the Nile. After the time of Joseph a race of native kings, reckoned by historians the Eighteenth Dynasty, rose against the Hyksos, and drove them out. The Eighteenth Dynasty was succeeded by the Nineteenth, one of whom, the third king, is supposed to have been the Pharaoh "which knew not Joseph" (Exodus i. 8.). His name was Rameses II., and we shall find the monuments of his power and greatness all over the country. His daughter it must have been who found and brought up Moses; and to this day the modern Arab inhabitants of Cairo point out a place on the island of Roda, in the Nile, close to the city, as the exact spot where the princess "came down to wash herself at the river."

"In process of time," the sacred narrative continues, "the King of Egypt died." He had reigned sixty-seven years, and had mightily oppressed the Israelite colony in Goshen. The new king was thirteenth son of Rameses II., and was named Merenptah. He has left us no account on his monuments of the Exodus, but we are aware that other misfortunes besides his defeat at the Red Sea overtook him, and that the prosperity of Egypt under him began to decline. The famous crossing of the children of Israel probably took place below Suez, where, before the making of the Canal, there was a passage fordable at low water, but exceedingly dangerous in certain winds. A great German writer has formed a theory that the Israelites crossed an arm not of the Red Sea but of the Mediterranean, but recent authorities have refused to accept his opinion.

We now approach Zagazig, a large modern Arab city. Here a handful of the British troops, after the fight at Tel-el-Kebeer, performed a brilliant feat of arms, intercepting and dispersing five trains full of Egyptian soldiers. The railway stations are crowded with the long-robed and turbaned native merchants and their bales of cotton and sacks of wheat carried on asses. Reuben and his brethren must have looked just like some of these men. We can fancy Benjamin, a brown-faced boy in loose garment and bare feet, following his elders, with a sack like theirs. But we are recalled from speculating if the silver cup is in it by the offer of oranges which a pleasant-looking little girl in blue insists on our buying, or by the earthen bottle of cold water which another offers to pour over our hot and dusty hands.

We lunch at the railway station at Zagazig, and possibly buy our first antiquities from the bar-keeper. Before the war there was a fine bronze statue of a cat standing on the middle table of the refreshment-room, and we were reminded that the great brown mounds which we have just passed on the left, and which stretch away for miles to the southward, are the remains of what was once Pi Bast, now Tel Basta, the city sacred to Bast, the holy cat, whose worship was nearly as extensive in ancient Egypt as that of Apis, the bull of Memphis. The ruins are composed of crude, that is, unbaked brick, and are constantly being dug down by the farmers, as the dust forms a valuable dressing for the fields. In these diggings innumerable images of Bast, in almost every conceivable material, are found, some larger than life, some small enough to hang at the watch chain. The site of the city has been in part explored by M. Naville, who has found the Temple of "the sacred Cat, the lady of the White Crown."

We are now really in the Delta. The ancient name of Egypt was "Kam," which means blackness. We see its significance now. Wherever the ground is turned up it is like peat. The contrast of this blackness with the green of the luxuriant crops is very striking. If we watch the smaller canals along whose banks the train goes, we shall see specimens of the lotus-flower, a pale blue water-lily. The air is full of birds, many of them strange to us. The hawks are numerous, from the great kite down to the little kestrel or windhover, which the ancient Egyptians worshipped as Heru or Horus. Following the ploughman are flocks of the little white cranes called by the Arabs Aboo Goordán, and by us the Paddy-bird, or buff-backed heron. We can quite understand as we watch them flitting about that the ancients used the figure of one as a hieroglyph for "Ba," the soul. Long strings of camels carry green fodder, or canes, or corn; a man on a donkey, with a child in his arms, goes by with his blue-robed wife following him on foot. Sometimes it is she who rides, which she does seated astride. The *Fellahs* are a cheerful folk, and as they go they talk and laugh incessantly, as if the tax-gatherer, and the usurer, and the conscription, and forced labour, and all the other enemies of the poor in Egypt, had never existed.

Agriculture is, of course, the main business of Egypt, and the soil of the Delta is perhaps the most fertile in the world. It is always supplied with water by innumerable canals, annually filled when the Nile is high, and gradually diminishing till the inundation commences again in June. As the canals go down, the character of the crops is varied, but three distinct harvests are commonly taken off the same ground if it is artificially watered. This is effected, for the most part, in a very awkward and clumsy manner by means of the *sakeeyeh*, or water wheel, and by the *shadoof*, or leather bucket, worked at the end of a pole balanced on a horizontal bar. But in Lower Egypt steam pumps are now becoming very common, as are also windmills, which act extremely well, as a perfect calm is very rare, and as the wind blows pretty steadily for an average of nine months in the year from one quarter, namely, the north.

The Nile and its inundation are objects of constant interest and solicitude. A low Nile means something like starvation for thousands. The cause of the inundation is the heavy rains of Central Africa. The Nile receives no affluents for the last 1,800 miles of its course, but is constantly feeding canals and reservoirs, so that by the time it arrives at the Delta very little of the original river remains, and the two mouths of the Nile, flowing into the sea respectively at Damietta and Rosetta, are inconsiderable streams. The average difference between high and low water is about twenty-six feet, and in Upper Egypt, where it is permitted to flow over the land, the towns are raised on high mounds to protect them.

The sun is beginning to set as we approach our destination, and just as we pass the last station, Kalioob, we may see on the right the dim forms of two of the pyramids; and on the left the domed mosque in the citadel above Cairo.

There are plenty of excellent hotels in Cairo. If we would see fashionable life, we may go to the celebrated "Shepheard's"; if we would have comfort and quiet, there are several other hotels, some of them very good. The scene at the railway station is one to remember. The many coloured dresses, the many coloured faces, the mixture of eastern and western manners, the noise, the dust, and the soft golden light of evening over it all, are unlike anything else in the world. The streets of the modern part of Cairo are not beautiful, though much improved in the last few years. They are too wide for a hot climate. Constant watering will not subdue the still more constant dust. The trees give but little shade under a vertical sun; and we are glad to escape from the glare into the old town, with its narrow winding lanes, sometimes roofed over, and its red and white mosques with their picturesque minarets, and the comparative stillness of unpaved roadways.

If there be sufficient time at disposal, the best way to see the wonders of Egypt is to take a sailing boat, or *dahabeeah*, up the Nile. The voyage to the second cataract occupies about three months, and is, on the whole, very pleasant, very healthful, and moderately cheap. An alternative method is by one of Cook's steamers, which "do" the Nile in a superficial style in forty days. A third plan is to go by rail as far as Siout, where the railway terminates, about 250 miles above Cairo, and on by the postal steamers, which run twice a week, but only allow of a visit to some of the principal objects of interest.

As it would obviously be impossible within moderate limits to give any account of the Nile voyage, some particulars of what may be seen during a few days' stay in Cairo must suffice to show the reader how much he will find to enjoy in a visit to Egypt.

The Pyramids of Geezeh are about seven miles from Cairo, at the other or western side of the Nile, which is here a broad and magnificent stream. The road, one of the few roads in Egypt, crosses it by a fine iron bridge, part of which opens for an hour every day to permit the passage of boats up and down. The road for the rest of the way is bordered by trees, which somewhat intercept the view of the pyramids, and as it runs in a straight line for the last four miles, we only gain occasional glimpses of the gigantic cairns till we are quite close to them. Far away, near the horizon, on the left, we can make out the pyramids of Sakara and Dashoor. A little nearer are those of Abooseer, and still nearer, but less visible, owing to their ruinous state, those of Zowyet-el-Arrian. There are, in fact, about sixty pyramids in Egypt, of which number those at Geezeh are the nearest to Cairo, and the largest.

There is now no longer any doubt that every pyramid was built as the sepulchre of a king. But as the kings of the pyramid-builders reigned at a period so remote that some have not hesitated to date it six thousand years ago, and as very few records of their time have come down to us, it was not at first very certain that they had not some more useful purpose than merely to contain the body of one person, however great. As our knowledge increases, it becomes, however, more abundantly clear, that the people of that time worshipped their king as a visible and incarnate deity, paying him the most extravagant homage, and obeying him without hesitation, even in such folly as the building of a pyramid. The first pyramids were built as early as the time of Ata, the fourth king of the second dynasty. The pyramids of Geezeh were erected by three of the kings of the fourth dynasty. A long period therefore elapsed before they were brought to the perfection we see in these later ones, and among the forty or fifty ruinous heaps which once were pyramids, we have abundant evidence that the art of building for eternity was not learned in a day.

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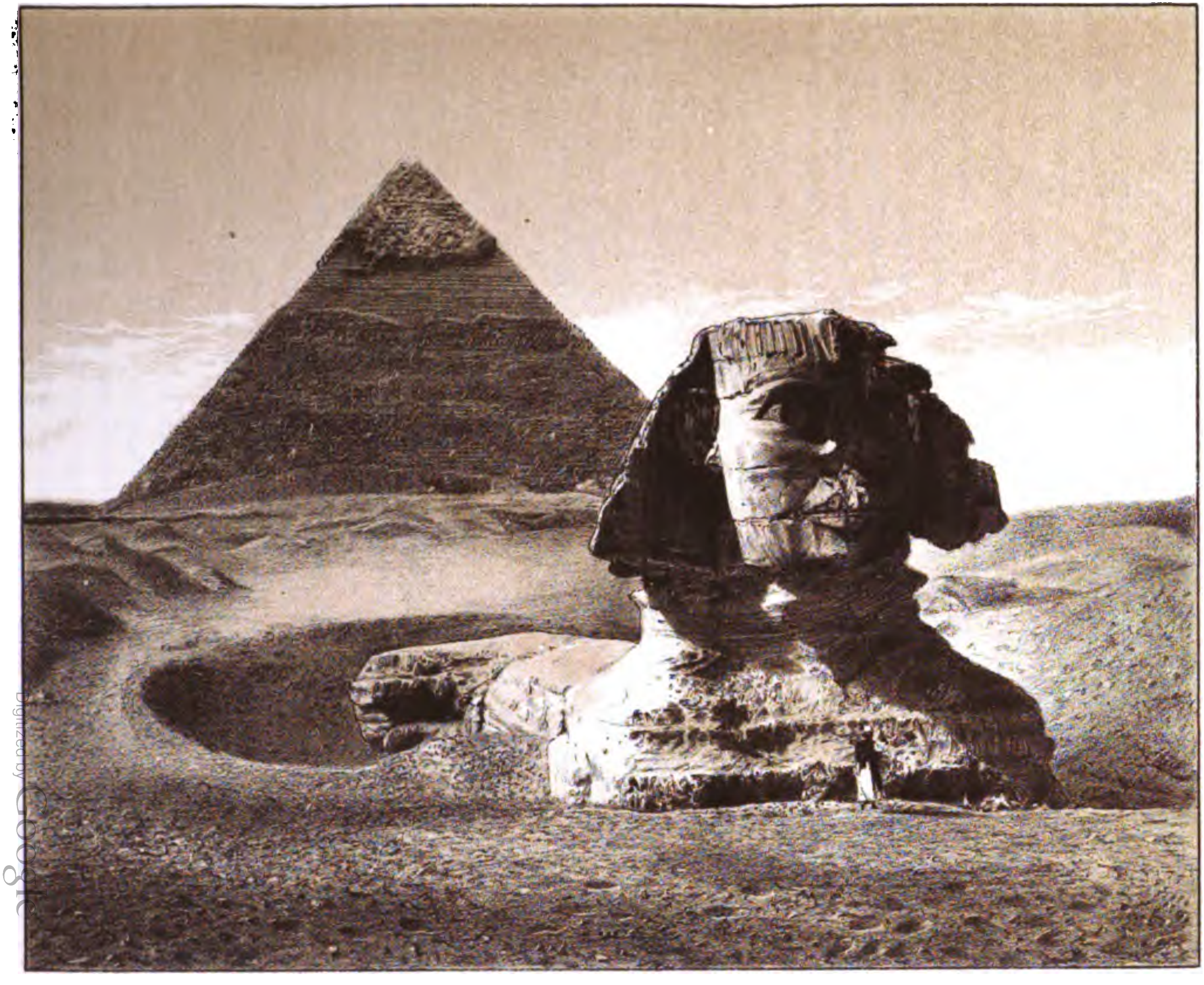
EGYPT



THE SPHINX & THE PYRAMID OF CHAFRA.

There are nine distinct and but partially ruined pyramids on the summit of the bluff before us. We are able to identify the personages for whom they were built with some amount of certainty, though no record is carved on any of them. The nearest, which, though not now the highest, is always called the "great" pyramid, has been attributed to a king named Shoofoo, or Chufu, whose royal title appears painted, apparently by the masons on some of the stones of the interior. He is called by the Greek historians, Cheops. Of his life and reign we have a few particulars. He succeeded a king of the third dynasty, Seneferoo, whose pyramid is believed to be at Maydoom, about fifty miles up the Nile. He married the widow of his predecessor, and had several sons and daughters, some of whom are buried in the cemetery which surrounds the pyramid. He reigned for sixty-three years, during which he employed his subjects in erecting this stupendous monument, and as a modern author has observed, the echo of the cries of his oppressed people still resounded in the time of the Greek historians who visited Egypt. On the other hand, it must be remembered that the life and treasure spent in even a very short war would build a pyramid greater than this. The times of Chufu were probably very peaceful, though he and his predecessors are both represented on the rocks of Sinai as smiting down their enemies in battle, and population and food were abundant; while the neighbouring nations had not yet learned of the wealth of the Nile Valley.

The beauty of the construction, as well as the great size of the pyramid of Chufu, are alike remarkable. The stones of the entrance passage, and the enormous black granite slabs, of which the principal interior chamber is built, are so closely jointed, that even a penknife cannot be inserted between. The sides of the pyramid are so carefully faced to the four cardinal points of the compass, that we are not surprised to hear that its ancient name was *Khut*, the "horizon." The whole mass which covers thirteen acres, and is still four hundred and sixty feet high, or a hundred feet higher than the dome of St. Paul's, contains only three small chambers, the largest and best constructed of which measures only 39 feet by 17 feet. In this, which is called the king's chamber, is an empty sarcophagus of granite, the lid of which is lost.

The second pyramid rises at a steeper angle than the first, and stands on higher ground; but is very inferior in construction, the stones being comparatively small, and ill-jointed. The ruins of a temple, which was attached to every pyramid, still remain at the eastern side of this one, and a stone was lately found in it which bore the name of *Chafra*, the third king of this third dynasty, thus confirming the Greek attribution of the pyramid to Chephren. From the entrance of the temple a long causeway or paved path of white limestone, leads at a steep slope to the foot of the hill, where it enters a very curious building of red granite and alabaster, constructed below the present surface of the ground, and evidently at once a temple and a tomb. Here no fewer than nine statues, carved with the name of Chafra were discovered.

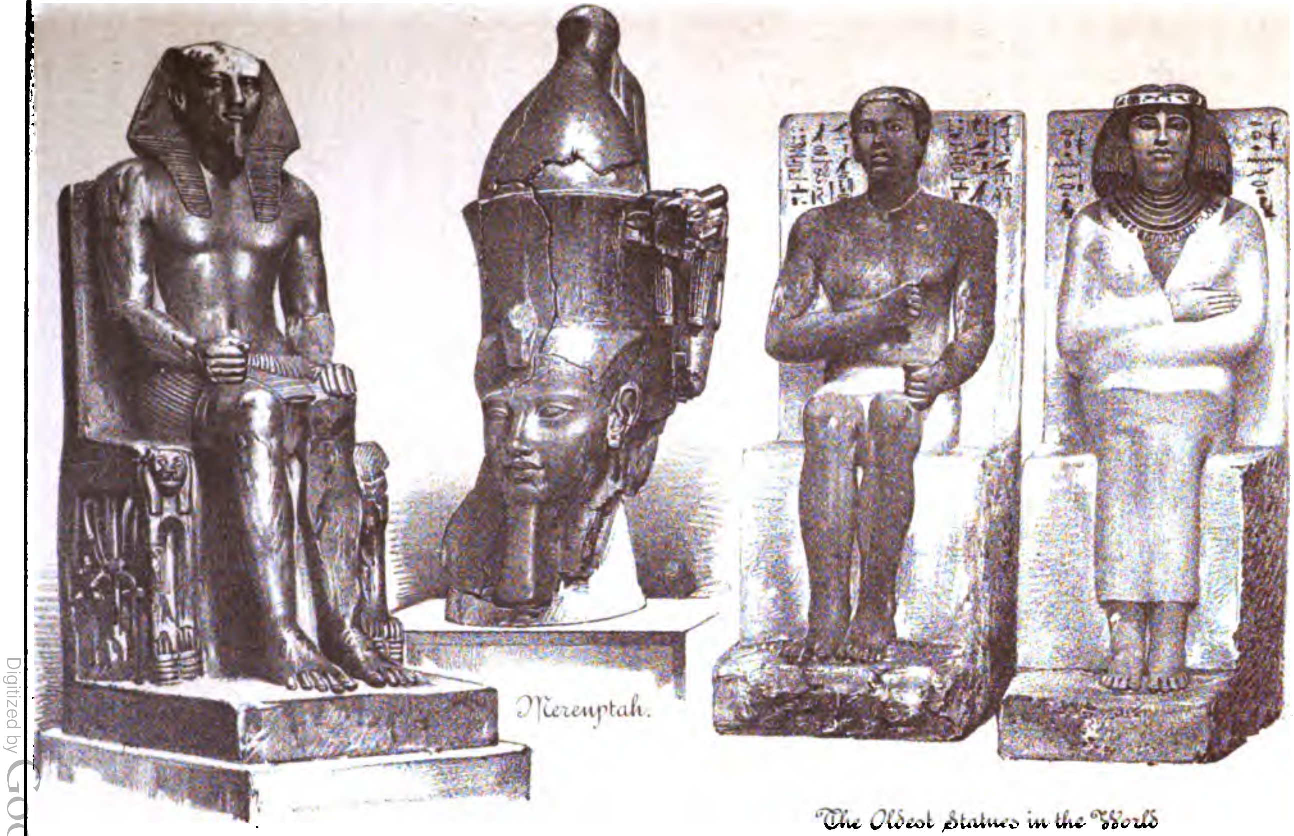
The third pyramid is the best built in many respects, but it is very small in comparison with its gigantic neighbours. In it was found the wooden coffin of a king named Menkaoora, probably the Mycerinus of the Greeks, who was the successor of Chafra, and whose body was in the coffin. Both are now in the British Museum. The six smaller pyramids were constructed for the queens and other members of the royal family, and on one of them was recently found the name of a daughter of Chufu, the princess Hentsen.

Next in interest to the pyramids, is the Sphinx, a colossal statue of a sitting lion with a human head, carved out of the solid rock of the hill-side. It presents at present no feature older than the time of Thothmes IV., a king of the eighteenth dynasty, who left a long inscription respecting a dream he dreamt, while reposing in its shadow. The French archæologist, Mariette, suggested that the Sphinx is the tomb of an early king, but this is very unlikely.

In addition to the pyramids, an immense number of tombs may be visited in the same part of the cemetery of Memphis. They are carved with pictures of agricultural life, exactly like what we saw by the roadside as we came through the Delta, and with long inscriptions in hieroglyphics, describing the owner of the tomb, his birth and parentage, his wife and his children, his public employments, his immense possessions, but above all, the fact that he was in favour with the great god, Chufu, or Chafra, or Menkaoora, as the case might be.

Such are a few of the attractions of an excursion from Cairo, which may be made comfortably in a carriage, with no fatigue or inconvenience. Luncheon will be served in a house built near the Great Pyramid by the late Khedive for the reception of the Ex-Empress Eugenie. Its obtrusive ugliness mars the view, but, on the other hand, every traveller is glad to escape into it for a few minutes from the glare of the sun, and the shouting of the Arab guides outside.

A quiet afternoon may be spent at the Boolak Museum, where even better than among pyramids and tombs the details of the ancient art of the Egyptians may be studied and admired. Here, among the remains of the earliest period is one of the statues of Chafra, mentioned above, carved life size, out of a beautifully veined block of diorite, a stone so hard that it will turn the edge of a steel knife. Here also are statues, in wood, of a man, Ra-em-Ka, and his wife, which are marvels of ease in portraiture: and stone statues of the prince Rahotep, supposed to be a son of



Chafra
Statue at Boulak

Merenptah.

The Oldest Statues in the World

BOULAK MUSEUM.

Seneferoo, and the lady Nefert his wife. A room is devoted to such examples of the period of the pyramid-builders, and among them may be seen the sarcophagus of Shoofoo-ansh or Chufu-anch, who may reasonably be supposed to have been the builder employed on the Great Pyramid itself.

In another room we see the forty coffins, chiefly of kings, queens, and princes, found in 1881 by Herr Brugsch, near Thebes; some of them, though older than the time of Moses, looking perfectly fresh and new, with nothing faded about them except the wreaths of flowers—lotus and acacia—which were placed on them by the mourners of three thousand years ago. They comprise the remains of among other kings, Thothmes III., Sety I., Rameses II., and many more whose names are familiar in Egyptian history. It is curious to look at the Jewish features of the Pharaoh who brought up Moses. The exhibition of these mummies is as sad as it is interesting.

In a central case are the jewels of a Queen, Aah-hotep, whose husband, Kames, played a principal part in driving out those Hyksos of whom mention has been made already as having been the patrons of Joseph.

In another chamber we see the bust of Merenptah, the Pharaoh of the Exodus, and statues of Rameses his father are in the vestibule and in the garden outside. In short, it would be impossible in the present limits to mention even a tithe of the interesting or beautiful objects with which this museum abounds. In one respect it excels all other Egyptian Museums; we know whence everything came, and are sure of its genuineness, since all result from actual diggings carried out during many years under the superintendence of M. Mariette and Herr Brugsch.

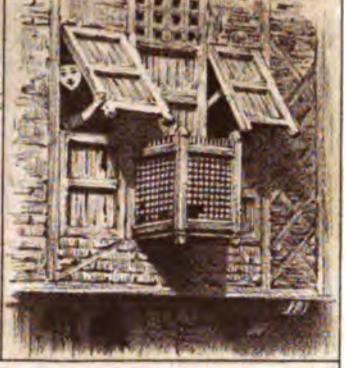
We have thus seen that the student of antiquity may have some pleasant days at Cairo, although we have said nothing of Heliopolis, where Joseph's father-in-law was priest, or of Sakara, where the oldest tombs and pyramids are found and the stupendous catacombs of the sacred bulls; or of the marvellous quarries at Toora, whence the stone for the pyramids was taken; or, in short, of many other places and things well worth a visit. Let us pass on to see what there is of a more modern kind in Cairo.

The native city is of great size, and contains so many mosques that the people say there is one for every day in the year. The native population is upwards of 350,000. The street scenes are so different from anything in a European city that a walk affords the stranger a series of surprises, and if he has any taste for the picturesque his eyes will constantly be charmed with the most exquisite combinations of colour and form. The main street of the old town is called the Moosky, after its builder, a vizier of the famous Saladin. It was formerly roofed over with great beams, but these have lately been removed and the street has lost its charm, as it is bordered on either side by European shops. Passing rapidly along it, therefore, we come to a cross street where everything wears a very different aspect. If we go to the right we reach the bazaar for Oriental produce, perfumes, slippers, silk, long robes, red caps, and so forth. If we turn to the left we come to the place where gold and silver ornaments are made, and to the so-called Turkish bazaar, where the principal dealers in curiosities have their stalls.

Choosing this route for our walk, we have to jostle our way as best we can through a dense crowd. Here are women bearing baskets of fruit or eggs on their heads, and begging you to buy in very good English. Here is a man with a wickerwork table, which he carries along before him. On it is some stuff which looks exactly, in colour and consistence, like putty. It is a sweetmeat made of almonds, and large slices are sold as he goes. Here is a man with a skin full of water over his shoulders, with which he very dexterously sprinkles the street to keep down the dust. The crowd becomes greater and then you find that you are assisting at a kind of auction. A man carrying a gorgeous piece of embroidery elbows his way past calling out the last price he has been offered. You have a moment to look at the article he carries and perhaps you add a franc to the sum he has named. He goes on, calling out the new price. Meanwhile, you turn to the left down some steps and through a low doorway. Between rows of low divans, on each side of which a man sits cross-legged, is a narrow pathway, only just wide enough for two people to pass each other. It extends, apparently, an interminable distance and you see branches and side aisles. This is the gold and silver bazaar. Each merchant has behind his divan a great iron safe in a recess; some of them have small glass cases in front, in which are specimens of earrings and bracelets, often of very pretty work. When you thread your way through the labyrinth you find yourself among the manufacturers, and see all kinds of operations, chasing and gilding, casting and moulding, and so on, being done in the open air. A little further a great clatter proclaims the vicinity of the coppersmiths. Emerging into the street again, you are about to cross it to enter the Khan Khaleelee or Turkish bazaar, when a man touches your arm. It is the seller of embroideries. He has had no bid so high as yours, and so adjudges the article to you. The Khan Khaleelee is of greater architectural pretensions than any other in Cairo, and is a paradise of painters, but the shops and stalls seldom contain anything worth buying. Near the entrance is the carpet bazaar, but, except by chance, you see nothing better or cheaper than what you can obtain in London. About the middle is a very fine pointed arch over which are hung models of ships. The arch led into the slave market, and the ships were the votive offerings of slave merchants who were anxious for the safe arrival of a cargo of their human wares. The bazaar

EGYPT

BRITISH BURYING GROUND—SUEZ



WINDOW IN SUEZ

WINDOW IN CAIRO

SUEZ

MAYDOUM PYRAMID

within was unaltered till the other day. But the wooden cells in which the more precious slaves were confined have now been pulled down, and the place has more the aspect of a cotton market, into which it has been turned.

When we are tired of the bazaar we may ascend, by a long street called the Darb el Vizier, to the citadel. This street is remarkable for the beauty of the windows of carved wood-work which project overhead. The lattices are formed of round knobs, very ingeniously arranged in patterns. Some of the prettiest have disappeared of late years, and modern French windows with Venetian blinds have taken their place. At one place the street is covered over with boarding. At this point we may stop to see a mosque, that of Ak Sunkur, which is perhaps the most beautiful in Cairo for the tile decoration which covers a whole wall. The rest of the building is in a very ruinous state: but as you step over the sill of the door, you see that it is formed of a column of black granite covered with hieroglyphics, a relic probably brought from old Memphis, at the other side of the river.

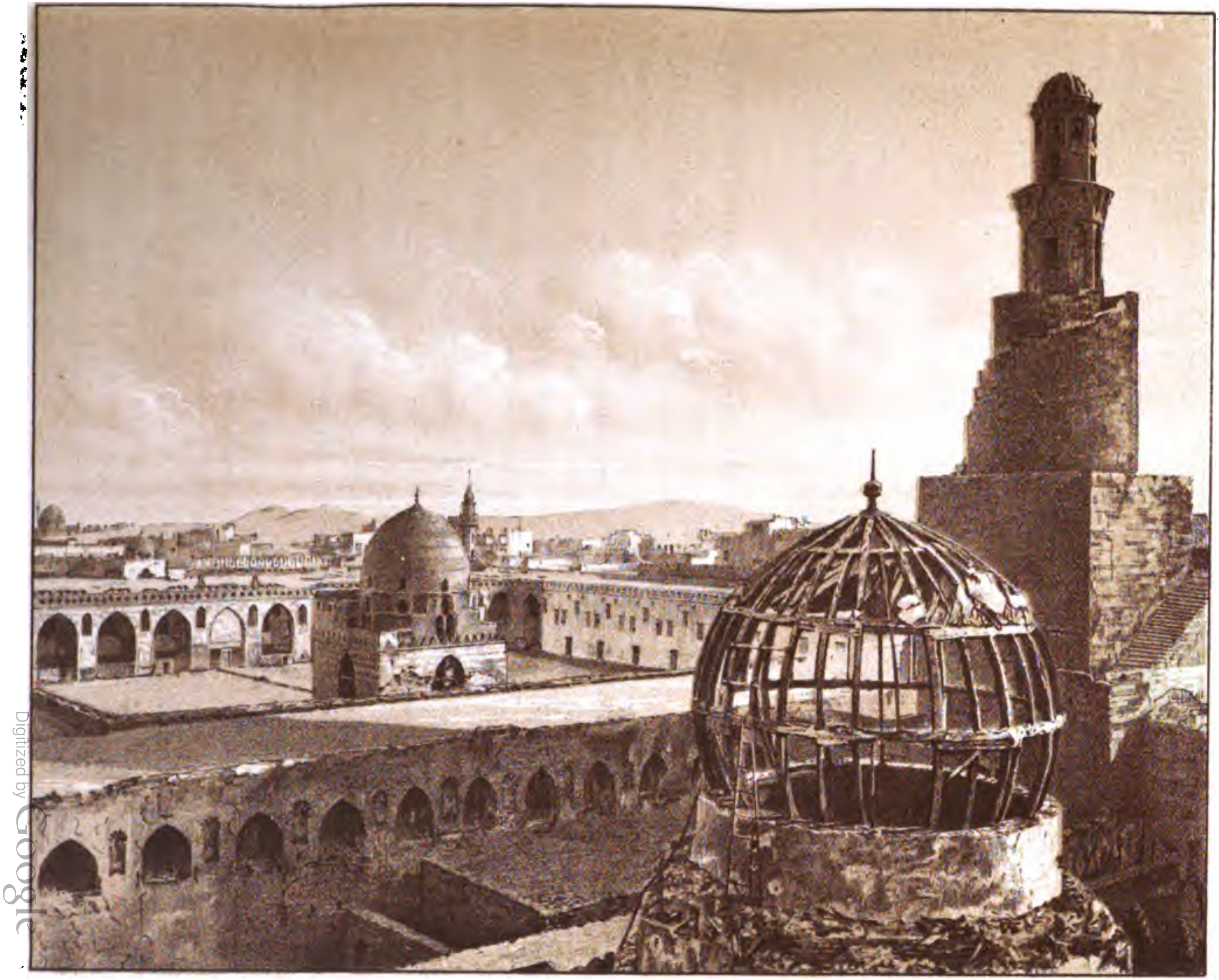
The citadel contains a mosque of great antiquity, now used as a barrack, and some towers built by Saladin, but the chief feature is the gigantic but unlovely, mosque of Mohammed Ali, the founder of the present rulers of Egypt. The interior is vast, without being impressive, and a moment's glance shows you that the alabaster lining of the walls is only carried up a little way, the upper part being painted in bad imitation. The tomb of the Pasha is behind a bronze screen. The most beautiful objects in the building are the carpets, with which the whole of the floor is covered, some of them being of a colour and material not now to be obtained. But the great object of a visit to the citadel is to see the view. For this purpose we pass round to the back of the mosque and look over a wall, down at the city below, and across the river, in the distance, to the Pyramids. Sunset seen from the citadel is a sight not to be forgotten, and worth even the price of a chill, which is hardly to be avoided, so suddenly does the heat of day turn into the coldness of night. The reader may refer to the Hon. Ralph Abercromby's *Seas and Skies in many Latitudes*, for a scientific account of an Egyptian sunset.

A fortnight may easily be passed at Cairo; and the climate is so temperate, often for weeks together without a cloud in the sky, yet, except in the height of summer, pleasantly cool and dry, that no better place can be imagined in which to make a break in the voyage to or from Australia.

In returning to complete the voyage to Australia the traveller may find it convenient to join his steamer at Ismailia, instead of going on to Suez by the dusty train. There is no difficulty about this course: and the hotels at Ismailia, of the usual oriental type, are not inconvenient. It must be remembered that except to the acclimatised, the drinking water is, to put it briefly, poison, producing both fever and also parasites, including the curious *Bilhargia Egyptiaca*, which is said to begin life as a parasite of the mosquito. There is a grim satisfaction in thinking that this odious little pest is itself a subject of attack by a still smaller insect, and we may repeat Swift's famous lines:—

> "So naturalists observe, a flea
> Hath smaller fleas that on him prey;
> And these have smaller still to bite 'em,
> And so proceed *ad infinitum*."

CAIRO.



MOSQUE OF TOULOUN.

CHAPTER XIII.

FROM SUEZ TO AUSTRALIA.

The Red Sea.—The Gulf of Suez.—Perim.—Kamaran.—Mocha.—Aden.—The Landing Place.—The Tanks.—Historical Notice.—Sokotra.—The People of the Coast.—Monsoons.—Colombo.—Diego Garcia.—Cape Leeuwin.—King George's Sound.

THE Red Sea may derive its name from the coral which lines its shores and which is often deeply crimson, but as a rule perfectly white. The words translated "Red Sea" in the English Bible mean really sea of weeds, and may well refer to those arms of the sea which stretched nearly across the isthmus of Suez before the gradual geological upheaval which has, even in historical times, changed the features of this region. If so, the Sea of Weeds may be represented by the Great Bitter Lake, or another through which the canal now runs. It should, however, be pointed out that before the passage from the canal to the open sea was dredged out, the Gulf of Suez was exceedingly shallow in many places, so that Napoleon and his generals are said to have ridden nearly across, and to have incurred great danger by a sudden change of wind and tide. The tide here is considerable, amounting to six or seven feet at the quays of the old town; and though there is little, if any, difference of sea level between Suez and Port Said on "the tideless dolorous midland sea," a slight current runs from south to north through the whole canal, though it is barely to be detected north of Lake Timsah.

Passing the Ashrafi light which stands on a coral bank eastward of the low coral islands of the same name, the steamship passes through the Straits of Jubal: between the black precipitous mass of Shadwan island, rising 900 feet out of the sea, and Ras Mohammed the south cape of the peninsula of Sinai, and enters the Red Sea proper, a narrow gulf 1,200 miles in length, and of great and varied interest. The climate is at times trying, the sea running N.N.W. and S.S.E. through a region where rain seldom falls, and the heat is great so long as no breeze can be felt. In the southern part south winds prevail from October to May, and north winds the rest of the year; in the northerly portions of the sea the wind is usually from the north. So long as the steamer is head to the wind the heat is less felt. But this trying weather is soon past, thanks to the speed of the modern passenger steamer. In the old sailing ship days it was held that for "six months out of the year you cannot get into the Red Sea, and during the other six months you cannot get out of it owing to the prevailing winds." But the steamer mocks at the wind, and carries the passenger from Suez to Perim in four or five days at most. Thus is restored to this historic sea the traffic with which it was enlivened at a period anterior to sailing ships, when vessels were classed by the number of their oars; by the man power of their motive force as now by the "horse-power."

Never exceeding 180 miles in width, the navigation of this strange inlet from the Indian Ocean has always been accounted difficult and dangerous owing to the number of low islands and coral reefs which line the shores. The central channel is generally very deep.

The Red Sea is known to the Arabs as the Bahr Malch, or Salt Sea. It has a coast line of about 3,000 miles, and yet not one single river flows into it. The entrance, at the Straits of Babu'l Mandib, is only fourteen miles in width, and in consequence there is a great inflow of "fresh" salt water from the Indian Ocean, to balance the great evaporation always proceeding. It has been calculated that but for this continuous supply the level of the sea, by evaporation alone, would fall twenty-three feet per annum. It would seem then that if the entrance were blocked for a hundred years, the bed of the Red Sea would be turned into one huge mass of salt. The water is said to have reached a temperature of over 100° Fahrenheit. In the main part of the Red Sea the tide seldom rises more than two or three feet.

This "*mare rubrum*" of the Romans was also the sea of Edom, which, being interpreted, means "Red," but it was the *Salt* Sea of the Arabs and the *Weedy* Sea of the Hebrews. Its waters are blue; and though there is much red coral, there is hardly sufficient to generalise appearances. At times quantities of oscillatoriæ give a red hue to the water. It seems, however, more probable that Edom supplies us with the right clue. The northern shores are composed greatly of red sandstone; the whole atmospheric colourings are decidedly pink—and the general blush of the aspect probably led the first visitors from the north to retain for the sea that title which appealed to the senses.

A run of eighty miles from Shadwan brings the steamer to the two small low coral islets marked by a lighthouse known as the Brothers. The islets rise abruptly from the bed of the Red Sea, a depth of 100 to 250 fathoms being found around and between them. To the westward of the Brothers lies Kosair, an Egyptian port at the point where the Nile approaches nearest to the Red Sea, the caravan journey taking four days. Here the Indian contingent of Sir R. Abercromby's expedition landed in 1802—struggled across the desert, and so marched boldly down to Cairo. One hundred miles from the Brothers, the lighthouse built on the Dædalus reef will be passed. The reef is a coral patch over half-a-mile long, forming a sunken reef, with very deep water all round. Nothing can be seen but the lighthouse. standing like a pillar in the sea. To the south-east of the Dædalus on the Arabian coast lies Zemba or Yembo, the port of Medina, from which it is, however, 130 miles distant. Opposite to Zemba, on the Egyptian coast, is the ancient port of Berenice, in the same latitude as the first cataract of the Nile, which lies some 150 miles inland. About 170 miles south of Yembo lies Jiddah, the great pilgrim port of Mecca. On the Egyptian side, south-west of Jiddah, is Sawakin the port of Upper Egypt. South of Sawakin the great main channel is narrowed by the extensive coral banks and low archipelagos of Farisan on the east, and Dahalak on the west; behind that of Dahalak lies the island of Massowah and the port of Annesley Bay—the scene of the Abyssinian expedition in 1867, when England spent no less than £6,000,000 to uphold respect for her flag in savage countries. The Egyptian Government exercises dominion over the coast line; but the back country belongs to the mountainous kingdom of Abyssinia, ruled over by a primitive Christian people. Magdala, the capital, is situated at an elevation of over 9,000 feet above the Red Sea. The Italians occupy Massowah, no one knows why.

The volcano of Jebel Tair, or the Hill of Birds, is next passed, a brown cone 900 feet above the sea. The Arabs of Muscat call it Jebel Dokan, or the hill of smoke, but none has been seen to issue from it for some years. It was ascended in 1837 by Major Leveson.

Southward of Jebel Tair lie the Zebayir islands, a rugged barren group about thirteen miles long, visited occasionally by fishermen from Kamaran on the Arabian coast; south of them again lie the Jebel Zukur and Hanish islands, a volcanic group with rocky eminences in fanciful shapes, strewn with sandy coloured earth and ashes and pieces of sharp rock. Wood is found in some of the valleys. Arab fishermen resort here between February and June when they lay in cargoes of sharks' fins and turtle. The peak of Jebel Zukur is over 2,000 feet high. Forty miles southward stands the little island of Perim guarding the entrance to the Red Sea. Sir Frederic Goldsmid supplies the following interesting notice of Perim, Aden, and other places in or near the entrance of the Red Sea:—

"In the Straits of Babu'l Mandib (the Gate of Tears), a mile and a half from the Arabian and eleven miles from the African coast, is the Island of Perim, latitude 12° 40½′ N., longitude 43° 23′ E., held by a small detachment of British troops furnished from Aden. Its area is about seven square miles, and it contains barely 250 inhabitants, including the garrison. Long low ranges of hills and salt sandy plains are the distinguishing physical features. The formation is volcanic, and the igneous rocks are covered with a layer of mud described in the official records as from two to six feet in depth, above which is another layer of loose boulders, or masses of black vesicular lava, in some places so thick as to resemble a rude pavement. Altamont, the highest point in the island, selected for the display of a flagstaff, is 214 feet above the sea-level.

Perim was taken possession of by the East India Company in 1799, a time when her soldiers were engaged in suppressing the power of Tippú Sahib, and the French occupation of Egypt rendered probable an attempt of French interference by despatch of troops from the Red Sea. It was abandoned in 1801, as strategically unfit for protective purposes. When Captain Haines reported on it in 1839, he noted a good harbour on the south-west, with an entrance half a mile wide, where were a tank and the 'ruins of a rudely-constructed pier—traces of the British occupation.' This has been found to possess great natural advantages, and being almost surrounded by hills, affords safe anchorage for ships at all seasons. In 1857 Perim was again occupied by order of the Indian Government, and in 1861 a lighthouse erected on it for facilitating the navigation of the straits by the many steamers passing to and fro between Suez and the seas to the eastward. In 1885 it was made a signal and telegraph station from which vessels could be reported home. Thus, owing to the convenient distance between the two places, a homeward bound ship passing Aden at night, could notify its progress from Perim at daylight. Barren in respect of grain and earth products, Perim is subject to drought also, and a condensing apparatus has been found the more suitable means of supplying the want of drinking water. Upon the whole, however, the advantage of the position to England is great, both in a political and commercial sense.

Kamaran, another small island in the Red Sea, some 200 miles higher up than Perim, was occupied by the British Government in 1858. It is about twelve miles long, and from two to four broad; but, except as a cable station for the telegraph or as a maritime depôt, it is comparatively of little value, and owns a scant population. When Albuquerque was forced to retreat from Aden in 1513, and failed in his attempt to find help at Mokha, he proceeded to Kamaran for the so-called winter.

Mocha, or Mokha, longitude 43° 20′ E., latitude 13° 19′ N., on the main land of Arabia, is also north of Perim, but nearer Aden than Kamaran. Once a place of considerable note, if it cannot be quite identified with the old Musa of the

Periplus, the sites of the two towns could not have been very far apart. But its importance has much diminished in modern times. At the commencement of the eighteenth century it is said to have had a population of 10,000; and this is reported by Niebuhr to have increased some fifty years later. Another fifty years later—in 1806—Lord Valentia found it an imposing port, with two castles, minarets, and lofty buildings; but the population had decreased to 5,000. Now it is little better than a village; its reputation as the principal port of Yemen resting upon the high quality of the coffee exported, but not from there or, as a rule, anywhere near the sea. The greater part of the 'Mokha' commerce comes from Hodeidah, some miles higher up the coast, a port with a population of 25,000 to 30,000, whence there is a road of 140 miles to Sanaa, the capital of Yemen, through a tract rich in coffee plantations.

Following the coast line to the eastward from Perim, the traveller soon reaches the Indian Gibraltar—a term commonly, and not inappropriately, applied to Aden, latitude 12° 47′ N., longitude 54° 10′ E. The Peninsula bearing this latter name, situated on the south-east coast of Arabia, about ninety miles from the entrance to the Red Sea at Babu'l Mandib, originally formed part of the large province of Yemen (Arabia Felix), but has for nearly half a century been included in British territory under the immediate control of the Government of Bombay. Jebel Hasán (Little Aden), an adjoining peninsula, together with the harbour, are also within British limits. The whole area is estimated at thirty-five square miles, and the population at not less than 20,000 souls, exclusive of garrison.

Aden is described, in the instructive record of the Political Officer,* as a 'large crater formed of lofty, precipitous hills,' of which the highest peak is reckoned at 1,775 feet. These, 'on the exterior sides, slope towards the sea, throwing out numerous spurs which form a series of valleys radiating from a common centre. At one point there is a gap supposed to be the result of some convulsion of nature. The peninsula is connected with the Arabian continent on the north side by a narrow neck of land partially covered, at high spring tides, by the sea. But a causeway and aqueduct, which supplement, as it were, the natural isthmus, are always above water.

The town and part of the military cantonment are within the crater. Stone and mud buildings, of which some are double-storied, constitute the former. In the latter are barracks and mess-houses; but the most important construction is the Court House and Treasury Office.

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* An Account of the British settlement of Aden, compiled by Capt. F. M. Hunter, Bombay Staff Corps, Assist. Pol. Resident, 1877.

Passengers arriving at Aden by steamer are usually landed at one of the piers in the harbour north-west of the town. In the vicinity are shops and hotels, some public buildings, and the residences of consuls. At Steamer Point there is a crescent called after H.R.H. the Prince of Wales, who visited the spot in 1875. Here are both double- and treble-storied houses, and behind these, streets reaching to the hillside. On a spur of the hills stretching from the interior are barracks, a hospital, and the offices and abodes of the harbour master and agents of maritime companies. There is the small church, a post-office, and further to the south-westward a headland on which are seen the Residency, with mess-house and quarters of the officers of the Royal Artillery. The designation 'Point,' it should be stated, has a wide signification, and includes any inhabited part of Steamer Point. It takes from ten to twelve minutes only to land from the steamers at the post-office pier, which is broad and sheltered. Not the least interesting of the objects to be noticed in Aden are the water tanks, the character of which, both as regards original construction and the additions in more recent days, at once displays the vital importance that has been attached to providing a water supply in a region such as this. Now that condensers have rendered available the vast ocean itself to quench the thirst of man and serve the many purposes of fresh water to the civilized world, the storage of rain is comparatively of less immediate urgency than heretofore; but with a large and increasing population, in a hot, dry climate, the value of reservoirs is undeniable—and those of Aden have an exceptional claim to notice from an artistic as well as utilitarian point of view.

It has been stated that there are about fifty tanks in Aden, which, if entirely cleared out, would have an aggregate capacity of nearly 30,000,000 imperial gallons. The date of the original construction of these is carried back to the second Persian invasion of Yemen in A.D. 600. Many were apparently in fair preservation at the time of the British occupation, but it was not until 1856 that steps were taken to restore them in a manner commensurate with their practical importance. In twenty years thirteen had been completed, capable of holding 7,718,630 gallons of water—little more than a quarter of the ancient computation, but still a respectable supply. The descent of the rain water from the precipitous hills—on the outer or western side direct to the sea through long, narrow valleys; on the inner or eastern side over a table land, through numerous ravines, converging into one valley only—first suggested, it is presumed, the collection and storage of so precious an element, and reservoirs were the natural means employed for this particular purpose. These, again to quote the official report, 'are extremely fantastic in their shapes; some are formed by a dyke built across the gorge of a valley; in others, the soil in front of a re-entering angle on the hill has been removed, and a salient angle or curve of masonry built in front of it; while every feature of the adjacent rocks has been taken advantage of, and connected by small aqueducts to ensure no water being lost. The overflow of one tank has been conducted into the succeeding one, and thus a complete chain formed reaching to the town.'

Much of speculative history has been written connecting Yemen and its people with the Kushite race in the early Biblical ages, and, in process of time, with the Sabæans and Himyarites. Michaelis was in favour of identifying Aden with the Eden of Ezekiel (xxvii. 23). It is certain that the historian, Agatharchides (B.C. 146—77) refers to the trade between that place and the Indus, and Aden of Arabia Endæmen (Felix) is noted in the Periplus (A.D. 80—90) as the great emporium of Indian commerce. In the fourth century of the Christian Era it is mentioned as the locality of a church erected by the Christian Embassy of Constantius, son of the Emperor Constantine; but its later history is more or less absorbed in the chronicles of Yemen, a province at one time Abyssinian, at another Persian, at another dependent on the Khalifs, and for centuries a bone of contention to successive local imams or sultans, Portuguese, Turks, and Egyptians. During the second quarter of the present century, England had occasion to demand from the Arab authorities of the day satisfaction for injuries to her Indian subjects; when, owing to failure of negotiations, and treacherous behaviour on the part of the Sultan's son, the port was bombarded and seized by a combined naval and military force, and in January, 1839, it became a possession of the British crown. This was the first accession of territory recorded in the reign of Her Majesty, Queen Victoria. In 1850 it was declared a free port; and the immense development of its trade under its new governors is a matter of sincere congratulation. We are authoritatively told that it not only now forms 'the great seat of the Arabian trade with Africa, but an *entrepôt* and place of transhipment for an ever-increasing European and Asiatic commerce.' And it is, moreover, on record that during the first six years of British rule in Aden, the population more than trebled itself, and the trade rose from under £100,000 per annum to £3,456,063, it having been doubled by the opening of the Suez Canal. A Political Resident, who is sometimes also Military Commandant, presides over the settlement. He has two assistants and a Cantonment magistrate to perform the requisite revenue, judicial, and all administrative duties. There is a Brigadier-General to command the garrison, which consists of artillery, British and native

(Indians) infantry, native sappers and miners, and a troop of native cavalry raised for service in the Peninsula, to which mounted (on camel) Arabs are attached. There is also a police force under European inspectors.

As a military station Aden can hardly be considered popular. Its local attractions are rather for the visitor than for the resident, and its climate, if not comparatively unhealthy, is trying to many. But its physical features present a tempting study to the professional engineer, and its geographical position renders it of considerable interest to the Arabic scholar and ethnologist. The former involves a large system of land fortification, and the general defences of the isthmus, connected by a tunnel with the crater; and the disposition seaward, of martello towers, batteries and minor works: the latter embraces the consideration of a constant immigration of Yemeni and other Arabs from the interior, and Somalis and other Africans by water.

Those again to whom a professional Indian career means exile and banishment, will prefer Aden to most stations in India proper, from its proximity to Europe and 'half-way-house' suggestions: and the contemplation of the many mis-called 'overland' passengers passing to and fro, will be to them a pleasing exchange from the monotonous routine of an ordinary cantonment.

Sokotra, (between latitude 12° 19′ and 12° 42′ N., and longitude 53° 20′ and 55° 2′ E.) is situated within 150 miles east of Cape Guardafui, and is in the direct route of ships passing to and fro between the Red Sea and India, or countries east and south of the Indian seas. In area it is barely 1,600 miles, the length (82 miles) being reckoned not less than four times the breadth. Known to Ptolemy as the Insula Dioscoridis—Sanskrit, Dirpa Sakhádára, or 'island of the abode of bliss,' described in the 13th century by Marco Polo, who certified to the Christianity of its inhabitants, taken possession of by Albuquerque and his lieutenants in 1507; subsequently reverting to the Shaikh of the Mahra, but in later years invaded by Turks and Wahábis; it became a question whether England should not occupy it in 1800, when the French army was in Egypt. There was, indeed, a temporary occupation by two companies of Bombay Native Infantry in 1835, of which little appears to have been generally known; but the careful exploration of the island in the previous year by Lieutenant Wellsted, I.N., had practically anticipated all further geographical research there, and in 1876 it was considered that British interests were sufficiently secured by a treaty with the local sultan who, retaining his rights of ownership, accepted the position of subsidised Feudatory of H.M. Government.*

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* In 1887 the territory was formally annexed to Great Britain.

Later writers on Sokotra refer to Wellsted as 'the only European who has explored the interior,' but admit their indebtedness also to French, German, and Portuguese authorities. It is described generally as a table-land, varying from 700 to 1,900 feet in height, resting on hills of limestone. 'A granitic range on the North, with scant vegetation of any kind, attains in places a height of 4,600 feet, and is varied by porphyry and other igneous rocks. The plains are for the most part sandy, and sterility is the prevailing characteristic; but across the table-land are valleys of extraordinary fertility.' Tamarida, the capital, a coasting station for British vessels in the earlier days of steam transport, consists chiefly of uninhabited houses, its whole population being limited to 100. Beni, in the immediate neighbourhood, is mentioned as 'the head quarters of a large population of Arabs and Bedouins.' Two other places, Kathub and Gollonsir, are also considered worthy of note; the former is about six and the latter about thirty-five miles west of Tamarida; all are on the northern coast. There is no harbour in the island affording protection from all winds; but fair anchorages are available at particular seasons. For the period of the north-east monsoon the bays of Gollonsir and Shaäb, Ghubbet Neh and Bandar R'dresseh are recommended; for the south-west monsoon, Bandars Garrieh and Delishi—especially the latter—Tamarida and, better still, the bay of Kathub.

It seems an undoubted fact that Sokotra would be rendered more productive and flourishing if it possessed a more energetic and enlightened population. As regards the existence of its Christianity, alleged by Marco Polo, and corroborated by writers for three centuries later, among them the illustrious Francis Xavier, it must have terminated in the course of the sixteenth century, when the Moorish must have displaced the Christian element in the insular community. No evidence to the contrary is forthcoming after 1700; and no traces of Christian churches were found by Wellsted in comparatively recent years. The Sokotra Christians are supposed to have been Jacobites, like many in Asiatic Turkey and other parts of the East.

Eastward of Aden extends the long line of coast forming the sea frontier of the large but little known Hadhramaut, of which the principal port is Mukalla. Further to the east again, and with a sea-front running N.E. and abruptly changing to the N.W. is the Province of 'Oman, in which are the ports of Maskat, Matrah, and Sohar. The first the head-quarters, or nominal head-quarters of the Imám, is a romantic, though somewhat sombre spot, and possesses mosque and minaret, bazaar, forts and, among its better class of buildings, a British Residency. It is situated at the extremity of a small cove, of horse-shoe shape, which forms the port, and is the emporium of a large trade between Arabia, Persia, and India. If the streets are narrow and crowded, those who habitually move in them present picturesque figures to the European stranger, and the traffic is genuine and constant. The town is built on a sandy beach, at the opening of an extensive pass into the interior, and on this side of the harbour is the landing place. There is deep water at the foot of the abrupt hills and rocks which flank and overhang the anchorage. Owing to the confined position of Maskat the heat in summer is intense. Cape Masandim, the most northerly point of 'Oman, marks the narrowest passage into the Persian Gulf, and on the coast immediately opposite is the Persian port of Bandar Abbas, a short distance to the S.E. of which is the island of Hormuz. The latter is of sufficient general repute to be briefly noticed."

As one of the ships of this line is named the *Ormuz*—(described above in Chapter One)—Sir Frederic Goldsmid, who has visited the Persian Gulf, has added to his notes on the western coast the following account of this ancient emporium of the east:—

"Hormuz—commonly written Ormuz—is about twelve miles in circumference, and rather more than four across; presenting to the eye of a visitor from without a mass of hills from three to four-hundred feet in height, covered with an incrustation of salt, amid which are seen higher peaks of pale rock, sharp in outline and precipitous, one, the most central, rising to seven-hundred feet.

Towards the northern end of the island is a modern village, near the supposed site of the old Arab city of which a minaret of brick, faced with glazed tiles, about seventy feet in height, still remains. Few other vestiges of a populous resort are here to be found; nor is there any substantial relic apparent on which to support the theory of ancient grandeur? At some little distance, however, there are Arab tombs not without interest, or architectural and historical monuments. Milton must have given currency to a prevailing notion in the commencement of the 17th century when he coupled Hormuz with India as a region typical of wealth;* and the same prestige may have attracted European ships towards it during two centuries preceding. But it is difficult to believe the historian's assertion that the city built by the Portuguese in comparatively modern times became 'one of the greatest seats in the east for splendour and luxury.' At the extreme north, and covering the Arab-village and minaret is an old Portuguese Fort held by a few soldiers on hehalf of the governor of Bandar Abbas.

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* *Paradise Lost* Book II:—

"High on a throne of royal state, which far
Outshone the wealth of Ormus and of Ind,
Or where the gorgeous East with richest hand
Showers on her kings barbaric, pearl and gold,
Satan exalted sat—"

It was separated from the main island by a moat originally crossed by a bridge. Immediately south of the minaret is the supposed site of the Portuguese town, of which the foundations of houses along the sea-shore, and a ruined outwork present some kind of indication. Southward again are the traces of old water cisterns, and it is believed that the ancient city extended to a considerable distance along the plain, in this direction. Here to the west are the ruins of the Mohammedan Mausolea, while in the south-east of the island is the ruin of the Turrur Bagh, the abode of Turrur Shah, who ruled in Hormuz in 1347-78.

Old (or the original) Hormuz, founded by Ardashir Babigan, or by Arabs during his reign, occupied, in all probability, the site of Harmozia, a city and capital of a kingdom at the mouth of the Anamis (now Minab river), visited in about 325 B.C. by Nearchus. Its position would thus be on the mainland, east of the island. Local history tells of fifteen kings there, the last of whom flourished in the beginning of the 14th century, and was driven by invasions from the interior to find a capital less accessible to an enemy. He first sought refuge in the neighbouring Kishm, but afterwards transferred his domicile to the present Hormuz. Wars with other inland potentates ensued—and eventually possession of the place was obtained by the Portuguese."

The natives of Aden and the opposite coast—the Somalis—are physically a fine Arab race; and their vigour is seen in the pace at which they row the visitor ashore. Here also, as in many ports in tropical latitudes, the natives surround the ship and dive for coins thrown overboard—a far easier operation than it first appears—for the flat disc sinks very slowly. The passenger will note with curiosity the fact that these divers have apparently no fear of sharks—indeed, occasionally, human being and shark may be seen under water in close proximity.

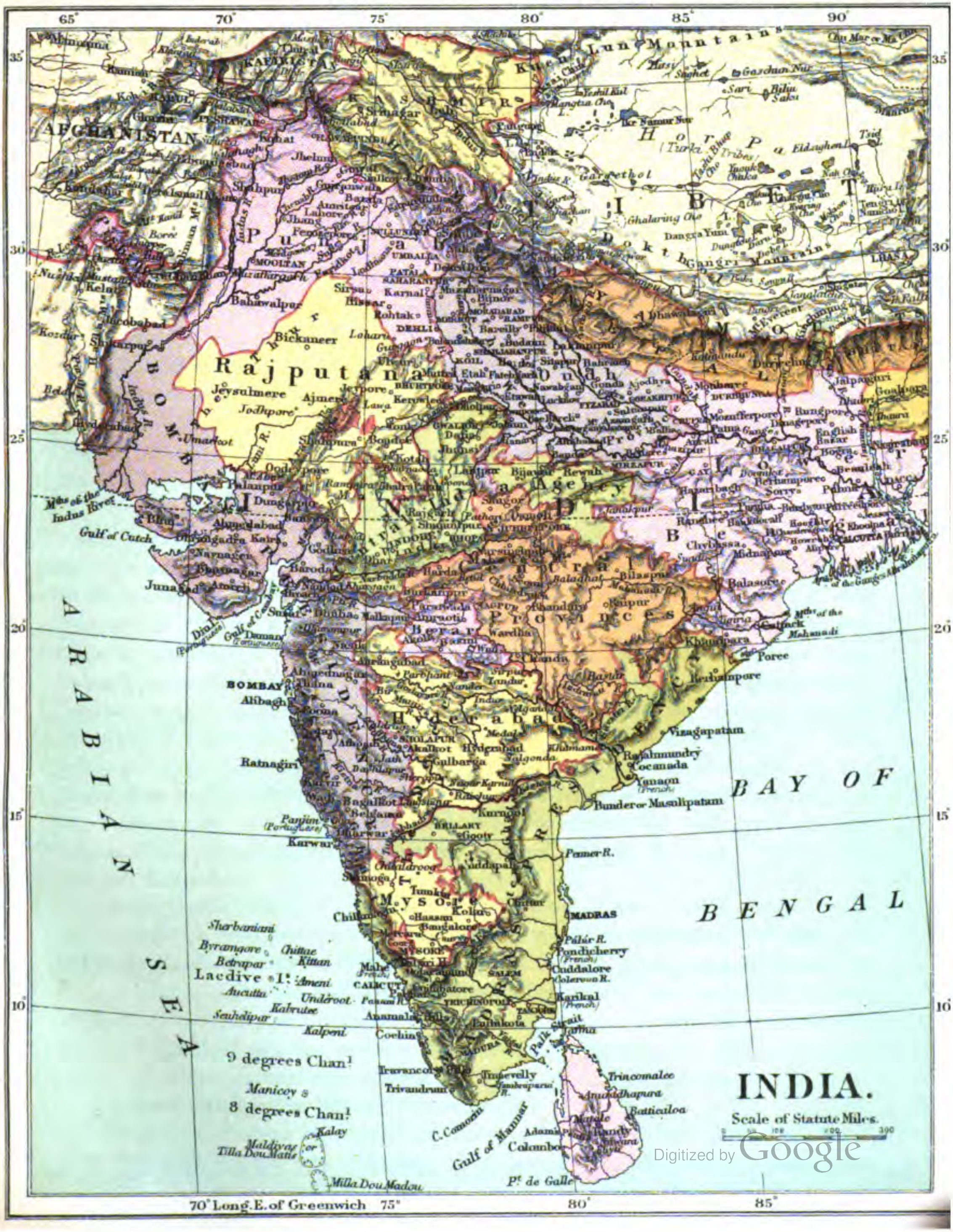
From Aden vendors of a variety of goods crowd off and display their wares on deck. It is needless to remind intending purchasers that the price asked is but little indication of what will be finally accepted. It may be worth while noticing that the wily merchant intends to take back with him ashore a certain sum in exchange for his goods, therefore if he makes some good bargains at first he will often be found ready just before the steamer sails to part with the remainder of his goods at really cheap prices. Maribou trimmings are a specialty of Aden.

The steamer's course now lies for the western end of Socotra and Cape Guardafui, distant 376 miles from Aden. Cape Guardafui, also called Ra's Asir, the north eastern point of Africa is a precipitous rocky cape 900 feet high, frequently enveloped in thick haze rendering a correct estimation of its distance a difficult matter. In the south-west monsoon this haze combined with the fierce movements in wind and water around this cape, make it a point unpleasant to sailors. From the end of 1876 to July, 1882, there were ten casualties near the Cape. They occurred chiefly during the period of the S.W. monsoon, April to September. In this season the weather is stormy, the currents are strong, and the land is generally obscured by a thick haze, which is thicker in the lower strata.

The similarity between the outlines of the headlands of Ras Jered Hafun, twelve miles south of Cape Guardafui, and that Cape, from which it is separated by a broad sandy plain, is a fertile source of disaster. In hazy weather at night the steep fall of Jered Hafun is dimly seen, and when this bears south of west, if Guardafui is not sighted, as is often the case, the navigator fancies he has rounded it already, and steers to the westward into the low bay of Wadi Tohum.

In the channel between Guardafui and Socotra Arab dhows may often be seen, and thoughts will revert to the liberal support given by England to the suppression of the slave trade, simply in the interests of humanity and of sympathetic kindness to the various native races of Africa that have hitherto been the victims of this nefarious traffic. Rounding Cape Guardafui brings the steamer into the Indian Ocean, and the course is shaped for Australia. If this happens between November and March, or in the north-east monsoon, the new ocean will be pronounced delightful; a clear sky with a pleasant moderate breeze putting every one in a good humour. If, however, the Indian Ocean is entered between May and September, when the thick weather and fierce winds of the south-west monsoon prevail, irritable tempers will be a little tried (see chapter XV, p. 273, "Weather at Sea"). A comprehensive table is given showing the course and nature of the monsoons in the several regions of the Indian Ocean in the Passenger's Track, Wind, and Current Chart. Consulting these a fair idea may be formed of the wind and weather that will be experienced in crossing the Indian Ocean.

Colombo, on the southern coast of Ceylon, is touched at by many of the vessels of the Orient Line. Here the passenger may decide for himself as to the "spicy breezes" celebrated in Bishop Heber's hymn; and will certainly enjoy the glimpse afforded him of tropical vegetation under the most favourable circumstances. Until



INDIA.

Scale of Statute Miles.

lately Point de Galle used to be the principal port of call for mail steamers. But the fine breakwater now finished renders Colombo the best harbour on the Ceylon coast, and it has rapidly increased in size and importance, and has added to the objects of interest it always presented to the visitor. The railways of which it is the terminus, open out a larger area of neighbourhood for the enjoyment of those making only a short stay, and altogether the place has changed so much that travellers who landed there eight or ten years ago hardly recognise it. Kandy is easily reached, and the most splendid scenery may be viewed from the railway. The Botanical Gardens at Beradunyia are among the finest in the world.

Colombo is the capital of Ceylon, and had a population in 1885, of 120,000, which has increased since. Considering that it is only some five and a half degrees north of the line, the climate is marvellously temperate and healthy; but, the weather is very hot as a rule in March, April and May. The distance from Aden is 2,104 miles.

The steamships used to call at Diego Garcia, one of the Chagos Archipelago, 1,709 miles from Cape Guardafui. This extensive cluster of coral islands lies on a bee line from Aden to Cape Leeuwin. The Company leased some land, buoyed the harbour, persuaded the Admiralty to survey it, and otherwise provided for its safe navigation. It forms a cocoa-nut plantation, divided among three Mauritius Planting Companies. Under European superintendence, black labour produces an annually increasing output of cocoa-nut oil, amounting now to about 150,000 gallons. The soil is poor, and the water brackish; but fish is abundant, and poultry and pigs are plentiful. Swarms of rats inhabit the cocoa-nut trees and levy a heavy tax upon their produce. Land-crabs, turtles, and birds, once a marked feature of the group, are rapidly dwindling in numbers. The climate is remarkably healthy for the tropics, and would be agreeable but for the mosquitoes and other noxious insects. The temperature rarely exceeds the few degrees of "play" between 77° and 85° Fahrenheit.

Diego Garcia, which is a very typical example of a coral "atoll," formed by a narrow wall of coral surrounding a central lagoon, is thirteen miles in length, and about eight miles in extreme breadth; the entrance to the lagoon being little over one mile in width. The coral wall is generally from three to four, and nowhere more than six feet above high water; but the trees with which it is covered attain in several places a height of 150 feet, causing the island to be visible at a distance of ten miles. A steep coral reef on which the sea breaks heavily fringes the outside coast of the island and renders landing impracticable.

As the ship passes by, several of these curious islands may be sighted, but it often happens that not one is visible. They are all very low, and the palms with which they are covered seem to rise from the surface of the ocean. The coral "insects" build by separating the particles of carbonate of lime from the salt water and forming them into an agglutinated mass: each generation growing up upon the lime leavings of its ancestors. Occasionally coral is formed round an island that is "subsiding." As such islands gradually decrease in circumference, and as the coral continues to rise perpendicularly on its original foundations, a ring of coral is formed around the ultimate peak of the subsiding island, and we have what is termed an atoll. A remarkable feature of these atolls is their generally horseshoe shape, with the opening to leeward of the prevailing winds. This is probably due to the general drift of water providing fresh lime to windward, whereas the water which passes to leeward, has, so to speak, been sieved of its lime.

The Chagos Islands form, with the thirty Seychelles, a Dependency of Mauritius. They are the home of the curious double cocoa-nuts, which before the discovery of these islands, had only been found drifting on the water, and were consequently declared to be of sea growth.

A run of 3,197 miles from Colombo brings the steamer in sight of Cape Leeuwin, the south-west point of Australia, and the beginning of the end is attained. Cape Leeuwin (Lioness), so named by the captain of the Dutch ship *Leeuwin*, in 1622, is a small round headland fronted by reefs, only forty-three feet high; the land north-east of it, however, rises abruptly to nearly 500 feet, and is visible thirty miles off.

From Cape Leeuwin to King George's Sound, the distance is 158 miles. The coast line is barren but picturesque and of basaltic formation, some of the capes rising perpendicularly from the sea. The views as you approach are very fine, though the highest, Cave Point, is not more than 700 feet high. Keeping Breaksea, where there is a lighthouse, on the starboard side, and watching as you pass the curious effect of the waves breaking into deep caverns and "blowing," like a whale, at the very top of the cliff, you can make out the opening of Princess Royal Harbour, and some higher ranges of mountains further inland, one of which—a long way off—called Bluff Knoll, rises to 3,640 feet. Both on the right and on the left, as the vessel approaches the entrance, basaltic columns are to be seen, and a geologist, when he views the great natural harbour within, is very likely to speculate as to submerged craters, and to think of Messina, and other places of the kind. Once well alongside Breaksea, you are in anchorage, and within the Sound, comparatively safe from the mountainous waves which come up with a south-east wind direct from the Antarctic Pole. The Sound is well marked out with islets and rocks, some of which strangely resemble the castles and towers of the old country, and rise in places more than a thousand feet above the sea. Few vessels are ever moored in the Sound. The harbour is too tempting. As we pass in, the natural strait being only a few hundred yards wide, we find ourselves in another world. We have been contemplating the brown, rugged back of the scenery. Now, we are surrounded by great hills—the greenest we shall see in Australia—and across the two miles of blue water which the harbour encloses, are natural woods creeping up the hill to the south-westward, and only ceasing when they reach the seaward edge of the granite cliff. The little town—or, as Australians always say, township—of Albany, is on our right, and straight before us a wide valley slopes upward, till it is lost in the blue distance about Willyamp and the Porongorup Range. Long before these mountains are reached the traveller will have left the little oasis round Princess Royal Harbour far behind, and a wide stretch of yellow desert intervenes between Albany and the next "township" on the road to Perth, the capital of the Colony. A railway is in progress, but the 260 miles are in many places almost barren and devoid of inhabitants, while Albany itself cannot boast of a population which greatly exceeds a thousand. The steamers come with the mails once a week, and call also on the homeward voyage. There is a long wooden pier, close to which the largest ships may tie up or anchor, and the few streets, surrounded by the flowery gardens of many charming villas, may be seen at very close quarters without landing. But it is well worth while to stay a few days, if possible, as the princes did in the *Bacchante*, and as Lord Brassey did the other day in his yacht, the *Sunbeam*. The easily defended character of the place, which the lamented Sir Peter Scratchley termed "the key of Australia," but which might even more appropriately be called its lock—a lock which in its present condition, any warlike key might open,—is very plainly visible. Albany will certainly be a town of importance before long. It has been proposed as the meeting place of the congress of the federated colonies; it is admirably suited from its climate for a sanitarium for India and for other parts of Australia; and above all it is a military and naval position which might be rendered as impregnable as Gibraltar at a comparatively nominal cost.

From this, the first point of Australia touched, we go on to Adelaide, Melbourne and Sydney, under the guidance of Mr. H. E. Watts, formerly editor of the Melbourne *Argus*. Before entering upon his account of Australia we may endeavour, in the next two chapters to study nature and science at sea.

CHAPTER XIV.

NATURE AT SEA.

UNDER THE SEA.—COLOUR BANDS.—SEAWEEDS.—LUMINOSITY OF THE SEA.—MEDUSÆ.—MOLLUSCS.—FISHES.—SHARKS.—TURTLES.—CETACEA.—BIRDS.—THE STARS.—THE ECLIPTIC.—THE SOLAR SYSTEM.—HOW TO KNOW THE STARS.—THE PRECESSION OF THE EQUINOXES.—SCINTILLATION.—MOVEMENT OF THE STARS.

By far the longest time out of sight of land comes after Aden is passed, and when we are out on the Indian Ocean, going along day after day without any change of scene or view, except what is offered by the sea and the sky. This seems to be the place where we may insert a chapter on the aspects of nature at sea. To the notes on "the configuration of the earth under the sea" and Natural History, which are by the Rev. C. H. Middleton-Wake, M.A., F.L.S., I have added Commander Hull's account of the stars, and of the study of Astronomy.

UNDER THE SEA.

There are few educated readers at the present day who have not acquired some information, however superficial, of the physical history of the earth. The facts are so apparent, the evidence they bear is so overwhelming, that even the least careful observer must be convinced that the relative arrangement of land and water has in times past been widely different from that which now prevails, and will be prepared to acknowledge that the vast changes visible on every side can only have been effected by slow but continuous action, prolonged not for a few short years, but through periods of time too great for our limited conception. There is proof sufficient in our own country of upheavals so vast that the imagination can hardly realize their magnitude; of depressions of land and of denudation—the removal, that is, by water or ice action, of plain or hill or mountain—so extensive that it is difficult for anyone who is not a scientific geologist to realize their meaning or measure the untold ages that have witnessed their completion. Sea shells and marine remains of comparatively recent species are found on the higher slopes of Moel-Tryfaen, in Snowdonia; the greater part of Scotland was, in times yet nearer to our own, more than 2,000 feet below its present level; at some still earlier period, how far back we cannot even suggest, stratified beds of sand and shale and coal, 10,000 feet in thickness, have been planed away from a large part of the district now known as South Wales, and every foot of clay, of sand, or gravel which fills our English valleys, or crowns her hills, bears witness to the action of ice, or waves, or running water. The possibilities everywhere of alterations in the levels of land and sea must therefore be accepted, and the strange results which such oscillations would effect may be temperately discussed. With these ideas we will again follow the steamship's track, and endeavour to describe the possible as well as the certain changes which underlie her path.

Before leaving the Thames the outgoing voyager will remark, upon his left, a long expanse of low-lying land behind the tidal embankment, while on his right, at some distance from the shore, he will see chalky cliffs and downs, like those with which, perhaps, he has become familiar in railway journeys north and south of London.

The low-lying lands on the left have in many places been excavated—nowhere more extensively than in the formation of the large docks at Tilbury. There are here three distinct beds of peat, separated from each other by well marked deposits of mud and clay and gravel. These peat beds, as proved by their contents, are of three very different ages. The upper and most recent, now buried beneath a thick clay, was once a forest of birch and hazel, standing well above low water; below it lies a second bed of clay, deposited by some ancient river, which, from hill to hill, filled the whole valley of the Thames—itself but an affluent of some much more important river, that, draining central Europe, found an exit far away in the northern sea; lower still is a deep sand bed, in which, thirty-four feet below the present surface, has been found a human skeleton, the remains, perhaps, of some hunter or fisherman who plied his trade when the mammoth, the cave-bear, and the hyæna ranged freely over what are now the British isles. The chalk beds to the right have a much earlier history, and tell of far greater changes; measuring in some places over a thousand feet in thickness, they were, as their fossilized contents reveal, deposited beneath the sea, where, for untold ages, they were slowly formed from living coral, and from the remains of coral animals, sponges and molluscs, and the numerous lime-secreting organisms which to this day abound at varying depths in the open sea. The evidence is irresistible, and in its presence no theory or tradition of the former prevalence of land or sea, where water or hill and valley now prevail, should be rejected as improbable.

Passing the Isle of Sheppey whose rapidly wasting shores foretell at some distant date its total disappearance, and Herne Bay, a bay whose name is its only memorial, and Thanet, once an island, and steering southwards, at the North Foreland the steamship enters a channel of moderate depth between the Kentish coast and what are now known as the Goodwin Sands, covered, at high tide, with from one to three fathoms of water. These dangerous sands, in which many a good ship has found her grave, were, says tradition, at one time part of the estates of Godwine, earl of Kent, the father of the unfortunate Harold, who, on the field of Senlac, yielded both life and crown to William, Duke of Normandy. The destruction of the land was not occasioned by any sudden depression of the country, but is due to the wasting action of the water, such as is perpetually at work along our eastern coast, the final catastrophe being hastened perhaps by some break or fault in the strata ; and at the present day beds of shifting sand, below which are found the clays and chalk of the adjoining mainland, are all that remain of what once were fertile fields and woods.*

Entering what is marked on the chart as the Straits of Dover, the sea-bed, as compared with the greater depth of the German Ocean, gradually shallows from 120 fathoms to 58, 38 and 18, and in one part to less than 2 fathoms; the dividing ridge following a line drawn between Romney Marsh and Boulogne. From this the English Channel deepens slowly as we proceed westward, so that the submarine banks across the Straits of Dover may be said to part two seas.

At a comparatively recent period, as geologists count time, the Straits and even the English Channel did not exist, and, except that south of Brighton, about half way between the present coasts, the soundings tell of what must once have been a considerable lake extending towards the west, continuous hill and valley connected the British islands with the continent. Of the depression of this whole area now covered by the sea, and of the perpetual widening of the channel by the wasting action of the waves, the English coast-line affords the clearest evidence. There is not a single cliff or headland unprotected by carefully constructed sea-wall, which is not yearly receding. Shakespeare's Cliff at Dover is no longer the "fearful and dizzy height" described 250 years ago. The ancient realm of Lyonesse, known in Arthurian romance, has disappeared, but in almost every bay along the southern coast where fishermen now drag their nets, traces still remain, in some places, as at Torbay, extending above low water mark, of forests which once clothed a pleasant undulating land diversified with lake and running water ; it needs but 200 feet of elevation along our southern coasts to displace the sea, though it might not restore the face of the country disintegrated by the wearing action of the waves ; while a general upheaval of 600 feet extending over the whole of northern Europe would efface the Baltic Sea and the German Ocean, unite in one country the whole of the British Islands from the Shetlands to the Scillies, and carry the empire of England ten degrees further to the west.

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* There is a delightful woodcut by Bewick, in his *History of British Birds*, vol. ii., p. 245, 1st ed. He has represented a cliff that the sea has already undermined, but on which are still standing the tower and western end of an ancient church; the graveyard once surrounding it has been destroyed: a skull lies upon the beach. In the foreground is a broken tombstone, on which is perched a cormorant; part only of the inscription remains—"to perpetuate the memory,"—but the name of the illustrious dead has disappeared, as has also that of the county for which he was *Custos Rotulorum*.

Leaving the English Channel the track of the steamer lies in a south-westerly direction. Passing Ushant on the left, the 100 fathom line is soon reached, and the voyager is borne above the deeper waters of the Bay of Biscay ; within a few miles the sounding line would tell of an almost precipitous descent of 1,000 fathoms, and before the lead could be recovered, a still deeper valley of 2,000 fathoms is reached. Soon again the sea bed rises rapidly, and before reaching Cape Finisterre the deepest water has been passed, and the ship's course follows a line of shallower water along the coasts of Portugal and Spain. Two thousand fathoms (12,000 feet) does not measure by any means the deepest part of the Atlantic, but even at 2,000 fathoms it was long supposed that the existence of animal life was impossible. One result of the scientific voyage of *The Challenger* has been to show that the lower forms of life are not injuriously affected by the singular conditions which prevail at so great a depth, well marked and characteristic examples of all the five invertebrate sub-kingdoms having been dredged from 2,400 fathoms. It is an abyss into which not the faintest ray of the most brilliant and unclouded sunshine can penetrate, and where the occasional phosphorescent light of some living organism alone relieves the absolute darkness ; and, so great is the pressure of superincumbent water, that as Wyville Thompson, the historian of the expedition, expressed it, "at 2,000 fathoms a man would bear upon the surface of his body a weight equal to twenty locomotive engines, each with a long train loaded with pig-iron" ; the statement, which is not exaggerated, would seem to render all life at these great depths impossible, and it is certain that immediate death would attend either the sudden removal or the sudden imposition of such pressure ; mollusca, annelids and star fish dredged from 1,000 fathoms, are always dead or in a dying state when they reach the surface; the sharks (*centroscymnus cœlolepis*) which frequent the coast of Portugal and are taken by lines 500 fathoms long, are invariably brought up dead; but a living creature, whose frame is permeated as well as its body surrounded by an incompressible fluid, is no more conscious of inconvenience than are we ourselves when waking from a refreshing sleep we learn, from the rise of the barometer, that the air pressure upon our bodies has been increased during the last few hours by perhaps half a ton. The profoundest depths of the Atlantic lie to the west, some hundred miles north of the Antilles. At one place nearly 4,000 fathoms was reached and the pressure proved so enormous that strong thermometers specially constructed for deep-sea sounding were crushed as in a vice. A sad incident marked this sounding; the first death on board had taken place from an accident the previous day, and for a poor sailor boy a grave was found in the deepest spot which has ever been fathomed in the ocean.

Just as in the seas which have already been passed through, the bed of the Atlantic wherever it has been sounded is found to vary greatly in depth. Our knowledge of the irregularities is to a large extent due to the careful soundings which have preceded the laying of the Atlantic telegraph cables. One result has been to show that in the neighbourhood of the Azores, of the Madeira Islands, and of the Salvages and the Cape de Verdes, which are more to the south-west, the sea is shallower than elsewhere, and it is possible to map out, though somewhat roughly, more than one plateau at a very considerable elevation above the rest. These discoveries re-open a question which has interested the scientific world for more than two thousand years; it is, whether one or more of these groups of islands which now rise above the waves, are not the few remains of a continent which once assisted to span the gulf between the new world and the old; the fabled, the mythical, but perhaps actual "Atlantis"; the country of which Plato wrote as once existing beyond the Pillars of Hercules, the rocks of Calpe and Abyla, which guard the entrance to the Mediterranean; the land in which were placed the Elysian Fields, and the Garden of the Hesperides; from which the early civilisation of Greece and Egypt, and Asia Minor, were derived; and whose kings and heroes were the Olympian deities of a later time. The legend enshrined in the *Critias* of Plato is of singular interest. It is told as even then an old world story, the repetition of an early tradition, learned by Solon at the lips of the Egyptian priests. It is of a mighty nation who dug canals, built ships and temples and palaces, and in pursuit of trade or warfare extended their empire over the whole of the then known world, but who perished utterly from the face of the earth in a fearful convulsion, when there occurred, "violent earthquakes and floods, and in a single day and night, the island of Atlantis disappeared, and sank into the sea." Of the possibility of such a catastrophe there can be no doubt, the rugged islands that remain are all more or less volcanic, and with the evidence continually afforded, in other parts of the world, of the enormous forces exercised by internal heat in the upheaval or depression of very considerable areas of country, we cannot reject this legend of the destruction of Atlantis on the ground of improbability. It must at the same time be acknowledged that the objections to the theory may not be lightly set aside. Naturalists will contend that, if this continent existed, the flora and fauna of the Eastern and Western Hemispheres would show some closer relationship: and geologists may argue that the period of its elevation must have been too remote to have influenced historic times, or have become the subject of tradition. On the other hand there are many mysteries which the former existence of Atlantis would resolve. Among these are the almost universal legends of a deluge, bearing a curious resemblance which it is difficult to believe are accidental, but which the existence and destruction of Atlantis would explain; there are similarities in custom and modes of worship, in forms of building and even resemblances in letters and the construction of language, which point to some common origin. The sculptured stones of Asia are rivalled in Central America and in Peru; the pyramid of Cheops is surpassed by the pyramid of Cholulo which stands on four times the area of the building by the Nile. The arched entrance to the treasure house of Atreus at Mycenæ, and the Palenque arch of the Aztecs, as pictured in Baldwin's *Ancient America*, are designed on almost identical lines. The traces of ancient serpent-worship prevail on either side, the stone implements, the stone axes and arrow-heads, sole relics of a primæval people, belong to both shores of the Atlantic; and from this lost continent may have come the more mysterious weapons of bronze, an alloy of copper and tin, whose manufacture it is almost impossible to attribute to the barbarous tribes with whose remains they are preserved. Of these Sir John Lubbock writes, "Not only are the several varieties of Celts found throughout Europe alike, but some of the swords, knives, daggers, &c., are so similar that they seem as if they must have been cast by the same maker." Whether the question will ever be definitely solved it is impossible even to conjecture. A hundred years ago the world knew nothing of Herculaneum, the site of Nineveh was little more than a tradition, and the lost cities of Central America were undiscovered; a hundred years hence perchance the dredge will have penetrated beneath the calcareous mud, the "globigerina ooze," the deep accumulations of dead coral foraminifera and shell-bearing rhizopods which form the floor of the Atlantic, and our museums be enriched with statues, arms, and implements from this long forgotten land, the suggested locality of Eden, and the cradle of the human race.

Leaving the Atlantic and its mysterious traditions, the Mediterranean is entered by the well-known Straits of Gibraltar. The sea rapidly shallows from 950 fathoms between Gibraltar and Ceuta, until, along a line from Cape Trafalgar to Cape Spartel, a distance of twenty-two miles, a submarine ridge of rock is found, about seven miles in breadth, on which the depth nowhere reaches 200 fathoms. After this the water deepens, until south of Sardinia in about 5° W. Longitude, it reaches 10,000 feet. On the "Adventure" and "Medina" banks the water shallows to 200 fathoms, beyond which is the eastern basin, where at a point between Malta and Crete the sounding line records nearly 14,000 feet, an abyss, says Lyell, "about as deep as the Alps are high." A third ridge or plateau lies between the Grecian Archipelago and the coast of Africa, and soon a depth of 6,000 feet is reached, but the water again shallows as the vessel nears Port Said. The submarine ridges at one time formed a land connection between Europe and Northern Africa, the Mediterranean then existing only as three inland seas, and it is confidently asserted that numerous birds of passage still follow those ancient lines of land in their annual migrations. It is probable that at the same period the Sahara Desert was much below its present level, and a continuous sea or strait extended from the Bay of Bengal to the Atlantic Ocean. The bed of the Red Sea is comparatively shallow, and is chiefly interesting in that towards its southern extremity are seen large numbers of massive "coral plants" of a sub-littoral type, which have been growing in their place for centuries. Single corals of the genus Mœandrina and Favia, having a globular form, from six to nine feet in diameter and of immense antiquity, have been observed, on which, says Ehrenberg, the Pharaohs may have looked. Beyond Cape Guardafui lie the two islands described by Marco Polo, which the "salvage men" and their wives inhabited apart, and beyond them Socotra, famous—or rather infamous—for its enchanters, who, he writes, "could make the winds blow as they desired, and produce great tempests and disasters." From this the track crosses the north-western part of the Indian Ocean passing its southern boundary in the line of the Chagos Archipelago. There is a tradition that below this sea lies another buried continent, in which, as in Atlantis, have been localized the four rivers and the pleasant land of Eden, the scene of the creation of man.

The theory of a pre-existing land, as we have already seen, involves no geological improbability; the very formation of the atolls and coral-reefs, with which parts of this sea are studded, requires the gradual subsidence of the land, and in fact, it is known that the whole area is still slowly sinking—from Madagascar and the Mauritius to the Chagos Archipelago and Ceylon, and to the Laccadives and Maldives, off the coast of Malabar, the twelve thousand islands of the old geographers. But compared with the traditions of "Atlantis," the legends of "Lemuria" are few and uncertain, and the extent of this lost country beneath the ocean is even less well defined. On the mountain of Sakya-muni in Ceylon, the ancient Seilan, a *Kist-vaen* or megalithic building was long venerated as the sepulchre of Adam. Expelled from Eden he had found a resting place from which, beneath his feet and stretching far away towards the western sun, he could see the beautiful land to which he might never again return. "There," says a traveller of the early 14th century, John of Marignolli, "is the dwelling-place of Adam, which he built with his own hands; it is of an oblong shape like a tomb, made of great slabs of marble laid one upon another"; but Marco Polo, who visited Seilan some seventy years before, and heard the story, declared that, "according to the Scriptures of our Lord, the sepulchre of Adam is not in that part of the world." As the print of Adam's foot remains, and, varying no doubt in proportion to the faith of the visitor, measures from three to five feet in length, the cautious Venetian showed, perhaps, his better judgment in rejecting the tradition. Probably the legend of Lemuria would have been long since forgotten, but for the unexpected support which it has received from more recent theories as to the geographical distribution of animals. It is found that certain unusual forms of animal life are peculiar to the islands which surround or lie within this area, and the former existence of a continent which would connect Madagascar with Western India, and whose eastern shores extended so far as the deeper seas between Malaya and Ceylon might account for their occurrence. Beyond "Lemuria" and Diego Garcia, of which we have spoken before, is a deep channel, which, continued in a north-easterly direction, passes east of Java and Borneo, and to the south of the Philippines, dividing these from the Australian region in which are the islands of Celebes, of the Moluccas, of Floris, Timor, and New Guinea. This channel of unknown depth, though in places, as between Lombok and Bali, only a few miles wide, narrower in fact than the Straits of Dover, sharply separates the Australian region from that of India. Although these groups of islands, north and north-west of the continent of Australia, are known by the general name of the Malayan Archipelago, the vegetable and animal life of the areas thus divided are singularly unlike, the contrast is as great as between the flora and fauna of the Old World and the New. On the one side, the indigenous life of Borneo, within whose area the whole of the British Islands might be set down, with hundreds of square miles to spare, is strictly Indian, while on the other, in the still larger island of New Guinea, there is no native cat or tiger, no sheep, or deer, or oxen, or any form of quadruped with which we are familiar, but instead are genera which belong to the adjoining continent of Australia. Of seventeen mammals yet discovered, fourteen are marsupial; about one half of the land birds of New Guinea are Australian; the common trees of Timor are various species of Eucalypti; and if these and other genera and species, animal and vegetable, are compared, although the physical conditions are so different—New Guinea with its luxuriant forests and moist hot climate, and Australia with its stony plains and dried-up water courses—the similarity in their natural productions is the more surprising, and unmistakably points to some earlier period, we know not how remote, when one vast continent extended from Tasmania to the equator, comprising within its area not only what is now known as Australia, but the thousand islands beneath the tropics and the more important island of New Guinea.

NATURAL HISTORY AT SEA.

THE ceaseless rapidity of movement which characterizes an ocean steamer, is certainly not favourable to the pursuits of the naturalist; a long voyage has been well compared to a series of dissolving views, in which each recently formed picture is in its turn displaced by some perhaps strangely contrasting one, while from the continual change no picture of the series affords opportunity for examination in detail, nor does the memory long retain its distinct recollection. Far different was it in the old sailing days when light tropical airs, or calms of many days duration, though wearisome to the crew who murmured as their vessel lay becalmed:—

> "As idle as a painted ship
> Upon a painted ocean,"

yet afforded the eager naturalist, armed with dredge and muslin-net and microscope, opportunities which were all too few to examine and record the numerous and fascinating forms of life which abound in the upper waters of the sea. Still even now a voyage, however rapidly performed, presents numberless openings for intelligent observation, and it is for those who can watch with interest the appearance and movements of bird, or fish, or other living thing, or whose attention is attracted by the occurrence of unexpected colour in the sea, or of mysterious "Phosphorescent Light," that these short and necessarily imperfect notes are written; and if each intelligent observer would himself carefully and accurately record, with date and locality, everything of every kind which arouses his interest; he might not only stumble upon facts hitherto unproved if not undiscovered, but would in after days at home when his journeyings are over, find a deeper interest in the study of natural history than he had ever known before.

To tell of all the living things that may be seen in a voyage which extends half round the globe would be impossible; to describe and name every fish that may appear above the surface, and every bird that crosses the steamer's path, or that follows in its wake would require a volume; the utmost we can attempt will be to record some few of the living creatures which will probably be seen, and in doing this we shall use fewest scientific terms, noting only such peculiarities of form or colour, as will serve to distinguish one species from another, arranging the whole with some regard to their natural order from the lowest to the highest.

And first of the phenomena known as "*colour-bands*."

Not unfrequently, especially in calm and sunny weather and in warmer seas, broad bands or patches of colour will be observed extending over wide areas to be measured by miles. The prevailing tones are generally a dull red, or yellowish brown, or of some tint resembling the vegetable scum sometimes seen upon the surface of quiet pools or ditches at home. These colour-bands have been described by travellers, from the time of Captain Cook, under the names of "Whale's food," "Sea dust," "Sea Saw-dust," &c., but they attracted attention at a much earlier period, and it has been suggested with more or less probability, that it was to the frequent occurrence of these "colour-bands" of a blood-red hue that a name was given to the Red Sea, equally significant in every language, modern Arabic and English, Latin and Ancient Greek. Ehrenberg was, we believe, the first to investigate the nature of these "colour-bands." He found them to consist mainly of a vegetable substance composed of minute thread like forms of Algæ, to which he gave the name *Trichodesmium;* the individual plants are almost microscopic, it is only when collected in vast masses that their presence becomes apparent. Further researches have proved that occasionally other groups of "Protophytes" prevail in the formation of these colour-bands, of which the most remarkable are the fragile forms of Diatomaceæ, though these are less frequent in the Red than in more open seas. Diatomaceæ are vegetables of microscopic dimensions and simplest character, yet with firm and beautifully marked external silicious coating, and with apparently independent powers of motion; their prevailing colour is a yellowish brown, and where found they exist in such abundance that, as in the Antarctic circle, they are observed to impart a stain to ice and snow fields many miles in extent, while a deposit of brownish mud in Victoria land as reported by Dr. (now Sir J.) Hooker, 400 miles in length, and varying to 120 miles in breadth, was mainly composed of the frustules of Diatomaceæ. In a fossil state these remains are well known as "Bermuda Earth," "Infusorial Earth," and "Berg-mehl."

With few exceptions sea-weeds are attached to rock or shore in comparatively shallow waters, rarely flourishing, says Forbes, at a greater depth than 100 fathoms; but the well-known *Sargassum*, or gulf-weed, exists in large masses in the open sea far from land, chiefly in tropical or semi-tropical climates, and may frequently be met with in the long voyage to Australia. Kutzing, in his valuable work upon Sea-weeds, has pictured more than seventy species, three of which are peculiar to the Mediterranean, three to the Red Sea, while six or seven others belong to the Indian Ocean. *S. bacciferum*, the common Atlantic species, has long and serrate fronds, others are linear or strap-shaped, others finely divided, but all bear small globular balls or air-sacs, which cause them to float on or near the surface of the water, where they form the habitat of numberless glass eels, crabs, or other forms of crustacea, medusæ, &c. If a portion of this weed can be secured and examined at leisure, a surprising number of living organisms will often be discovered, although from their transparency and minute size some of the more delicate will easily be overlooked.

It might naturally be supposed that some connection exists between the "colour-bands" above described, and the singular "*phosphorescent light*," as it is commonly but incorrectly termed, which so frequently appears after nightfall. Mr. Collingwood, to whose interesting *Rambles of a Naturalist in the China Seas*, we shall again have occasion to refer, has an admirable chapter upon the "Luminosity of the Sea," in which he classifies the diversified forms which this luminosity assumes. The most frequent are the sparks or points of light which appear and disappear in disturbed water, not alone in the open sea, but even high up in tidal rivers; the rarest is what he terms *the milky sea*, a phenomenon we ourselves had once the good fortune to witness, when on a perfectly calm and sultry night, the whole sea in every direction except in the steamer's wake, presented a soft white appearance, "reflecting a faint light upwards, illuminating the ship and rendering every part of the rigging plainly visible," the white light contrasting strangely with the blackness of the densely clouded sky. So far as is at present known, the luminosity, in whatever form it appears, is not effected by vegetable, but by various animal organisms; for when carefully examined the light flashes are found to emanate chiefly from minute entomostraca, or from noctilucæ and Beroë, and from other forms of creatures low in the scale of life. The actual nature of the light has hitherto baffled investigation, but whatever it may be, the term "phosphorescence" is a misnomer. Whether it is

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the result of organic nervous force, which in other classes or orders of living beings is exhibited in the form of electricity, cannot be definitely asserted; but we are convinced that it is in this direction that the investigation should be pursued. Singular indeed will it be if the happy inspiration of a poet, clothed in fitting language nearly a hundred years ago, should have pointed to a solution which still eludes the keenest research.

> ". . . . the waves
> . . . spangled with phosphoric fire,
> *As though the lightnings there had spent their shafts*
> *And left the fragments glittering in the field.*"

The exact limits of the class to which the name of Medusæ is applied are not easy to define; closely allied to the *Hydroid Zoophytes*, they vary considerably in form, but retain certain qualities common to them all, which allow us to retain them in one group, the more readily since it is not improbable that they all, under special conditions, exhibit luminous powers. The Beroë, *Cydippe pileus*, is an egg-shaped transparent mass, seldom exceeding half-an-inch in diameter, though a variety measuring nearly two inches in diameter, has been taken upon our own coasts. The Beroë moves by means of "cilia," and by branched tendril-like filaments, and is distinctly luminous; the points of light not being evenly distributed over the surface of the animal, but localized along eight bright bands, which, like meridian-lines unite at their extremities and are equidistant along its circumference; these bands, in the sunlight are highly iridescent, and have a constant vibrating motion. Another globular jelly-like animal is the *Noctiluca miliaris;* its normal size is about that of a small pin's head, flattened below; like the last, in occurs in incredible numbers, each individual being gifted with luminous powers, though the points of light are not as in the Beroë confined to distinct lines, but are dispersed irregularly through the body of the animal. To these two creatures we may probably assign a large proportion of the luminosity of the sea. The best known forms of *Medusæ* are the "jelly-fish," so commonly left by the retreating tide upon our English coasts; where, lying helpless on the sand, they rather resemble amorphous masses of jelly melting in the sun than active living creatures. Restored to their native element they are no longer shapeless, but conical or globular above, and concave below, with long and often brightly-coloured tentacles; they may not unfrequently be seen from the deck of a passing vessel swimming with a graceful movement by the alternate contraction and expansion of their transparent disk. They may not however be handled with impunity since they possess a stinging or irritating quality, the nature of which is unknown, and hence from earliest days they acquired the name, first applied to them by Aristotle, of "Sea Nettles," ἀκαλήφη. The most formidable member of the family is the *Cyanœa capillata*, an European species often more than twelve inches in diameter with long ribbon-like arms, which at times envelop an unfortunate bather, and remaining attached will continue to sting fiercely, even though severed from the parent trunk. It is possible that to some species of Acaleph may be attributed another form of luminosity which is not uncommon, especially in warmer latitudes. Looking over the side of the vessel on a moonless night, either into the wake or where the water is disturbed by the ship's movement, globular patches of light from a few inches to a foot or more in diameter will frequently be observed; the light is not steady or continuous, but appears and disappears at a few seconds interval, while the shape, so far as it can be discerned, will be seen to resemble the familiar umbrella-like disk of these Acalephs. Other marine creatures, higher in the scale of life, undoubtedly possess these mysterious effulgent powers, exhibiting them, perhaps, only occasionally under peculiar atmospheric or other conditions, or when subject to some external irritation.

An Acaleph, which is not known to emit light, but is otherwise of singular interest, is the "Portuguese Man-of-War," *A. Pelagica*. Though a denizen of tropical seas, where it sometimes occurs in prodigious numbers, it is occasionally borne by winds or ocean currents into the western basin of the Mediterranean, to the coasts of Portugal and Spain, and as far northward as the Isle of Wight. The animal is of a bladder-like form, six to eight inches in length, furnished with tentacles capable of extension from a few inches to several feet, and possessing in an unusual degree the stinging properties of its species. But the creature is remarkable chiefly for the beautiful iridescent tints of blue, orange, &c., which it displays as it floats on the surface of the sea with no self power of guidance, but at the mercy of the wind and tide. Another floating Acaleph, the "Velella," found chiefly in the Mediterranean, is able to erect a semi-circular membraneous crest, which acts as a veritable sail to propel it along the surface. What appears like a transparent undulating ribbon several feet in length, may sometimes be observed from the passing ship, a little below the surface of the water; this is the "Venus Girdle" *Cœstum Veneris* an animal nearly allied to the Velella; while, much higher in the scale of life, are various species of *Salpœ*, a genus of tunicated molluscs, frequently observed in tropical seas, of somewhat elongated shape, perfectly transparent, except for some slight yellowish or reddish internal colouring, and varying from one to twelve or more inches in length. In one well known form the animals are solitary; in another they are linked together by their sides into a sort of chain, and, highly luminous at night, are often seen floating at a little distance below the surface swaying with the undulating motion of the water.

With the exception of the Salpæ, already mentioned, and of such species as may be found entangled in floating sea-weed, the only members of the extensive division known as Molluscs which are likely to be observed belong to a higher class, the *Cephalopoda*, "Squids" and "Cuttlefish;" these are sometimes found floating in considerable numbers, but not generally so conspicuously as to merit remark, were it not for the pretty fable of the Nautilus, *Argonauta Argo*, entertained since the days of Aristotle, that the inhabitant of this lovely chambered shell spread its sails to the breeze, and employed its six long tentacles as oars to propel itself along the surface. It is true that the Nautilus does float upon the sea, but its "sails" are closely folded over the shell, which they entirely conceal; while its mode of progression, when not crawling along the bottom like a snail, is effected by drawing water into its body, and then forcibly ejecting it, thus producing a retrograde motion. It is not improbable that it was the Velella, above described, which was seen to erect its sail, but in the net which captured it the Argonaut was found; similar atmospheric or other condition had brought both to the surface; but once out of the water, the Velella would be only a pulpy, shapeless mass, and it would be natural to suppose that it was the beautiful shell of the Nautilus that had been impelled by the delicately tinted sail.

The deck of an ocean steamer, driving along at a rate of from fifteen to twenty miles an hour, would not generally be selected as a convenient vantage ground for observing the forms and habits of deep-sea fishes; it might rather be supposed that the commotion created by a swiftly passing vessel would cause the timid denizens of the sea to seek refuge in its profounder depths from unknown dangers. With most species this, doubtless, would be the case, yet there are fishes which, rarely approaching the shore, are attracted by a moving vessel, and for days together will follow in its track; others again, swimming in shoals near the surface, will only be seen as they retreat, often throwing themselves out of the water in their efforts to escape. Among the latter are the well-known Flying-fish, *Exocœtus*, belonging to the third sub-order of osseous or bony fishes. In shape they resemble the Herring, except that in the Flying-fish the lower lobe of the tail is longer than the upper; they vary from twelve to sixteen inches in length, and, though straying occasionally into English seas, are only common in warmer latitudes; *E. evolans* prevailing in the Atlantic and in the Indian Ocean; *E. Volitans*, a slightly larger fish,

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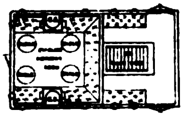
being more frequent in the Mediterranean; *volitans* may be distinguished by the possession of elongated ventral fins, which are not, as in *evolans*, placed near the head, but are so far back that if folded they would almost conceal the anal fin and touch the base of the tail. A third species is described, *Dactyloptera mediterranea* (*Dallas*), allied to the Sticklebacks; it may be known by the spines of the fins projecting, as do those of the Gurnard, beyond the webs.

Flying-fish do not possess true wings, neither, in the strict sense of the word, can they be said to fly. It would be a more correct description to say that their pectoral fins are so greatly enlarged that when, after a rapid passage beneath the surface, they project themselves into the air, the extension of these fins enables them to glide along for a considerable distance before they fall back into the sea. Mr. Collingwood, whose careful observations are recorded in his *Rambles*, tells us that a rapid vibration of the "wings," apparent just as the fish leaves the water, recurs each time it touches the crest of a wave, when it acquires a fresh impetus, not unfrequently altering the direction of its flight. He considers that the cause of their flight must undoubtedly be attributed to fear; he describes their rise from the ship's cutwater or bow as in a direction away from it in straight but radiating lines, adding that when a shoal is suddenly attacked by some predaceous fish they will rise and fly in all directions; he does not believe that they ever leave the water in play or sportive humour, but solely to escape from some peril real or imaginary.

Chief among the enemies of the Flying-fish, and occasionally seen as they spring out of the water in their pursuit, are some of the larger species of *Scombridæ*, an extensive class, varying in size, but of which the common Mackerel may be taken as the type. The best known is the Thunny "the fish of many names," *Scomber thynnus*. Although at times occurring in British waters it is chiefly found in the Mediterranean, where it swims in shoals, and though in length it does not ordinarily exceed four or four-and-a-half feet, fish of eight, ten, and even of fifteen feet length have been recorded; one indeed is mentioned by Aldrovandus in his volume *De Piscibus* (lib. iii. p. 317), as taken off the coast of Spain, which measured no less than thirty-two feet in length, with a girth at its broadest part of sixteen feet; on which his commentator in all seriousness remarks "it must have been very like a whale." It may be added that with the careful accuracy which befits a distinguished naturalist he records the date of its capture, "*die* 12 *Maij*, 1565," and gives a full page illustration of a deep-bellied creature with a beak like a parrot, and on its sides rudely drawn pictures of ships! "*in cuius corio trieremes exsculptæ sunt.*" Other varieties of Thunny are the Bonito, *Scomber bonito*, thirty inches in length, well known off the coasts of Spain, in the Mediterranean and in tropical seas, as the unrelenting foe of

2ND CLASS SMOKING ROOM



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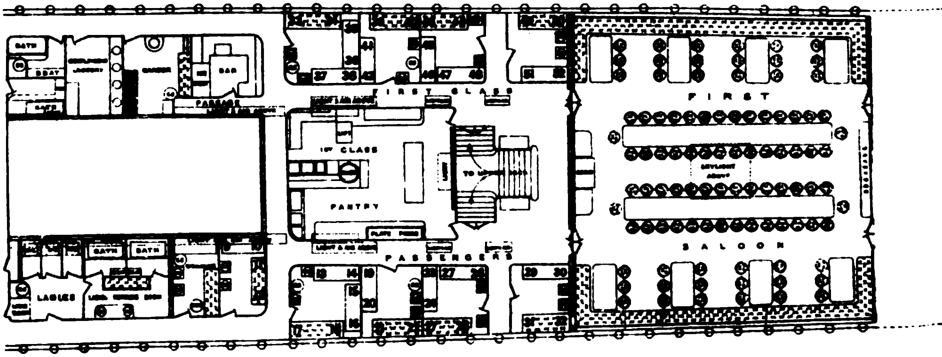
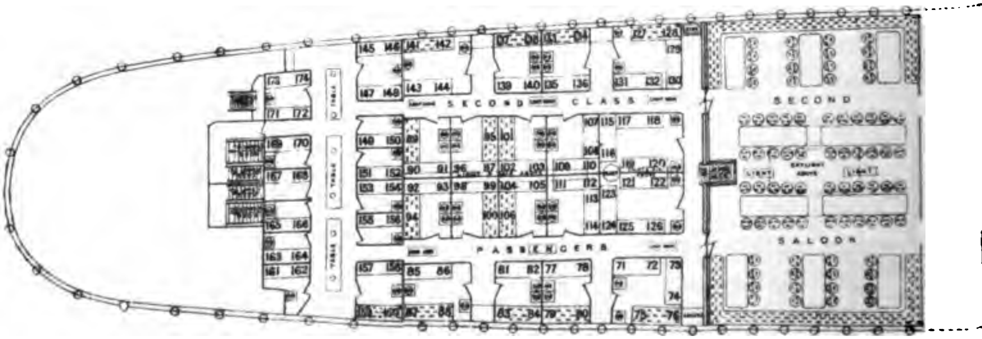
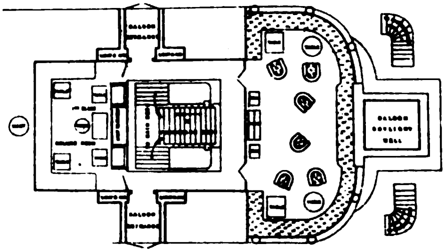




1ST CLASS SMOKING AND DRAWING ROOMS

AND SALOON ENTRANCE ON UPPER DECK.



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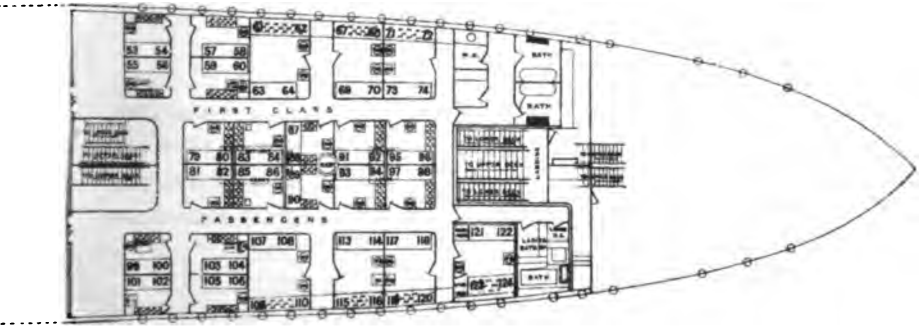

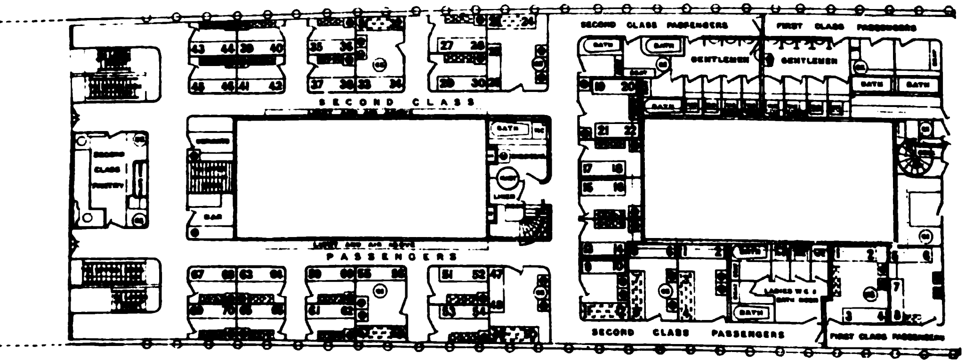

Odd numbers are upper berths

unfortunate flying-fish; and the *Thynnus alalonga* whose trivial name, Albicore, is not unfrequently applied to other species of Thunny. Allied to these is the Pilot-fish, *Naucratis ductor*, so called from its habit of accompanying ships, no doubt to feed upon whatever offal may be thrown overboard. In olden time when the compass was unknown, and a voyage from port to port was often one of danger and uncertainty, the Naucratis was credited with the amiable instinct of pointing out the route to the bewildered mariner; it is still believed to attend the shark, for the purpose of guiding it to its food and warning it of coming peril, but a more probable explanation of the strange companionship is that it may share the spoil which falls to the rapacious jaws of its savage friend.

In another order are the Squali or Sharks; the Blue Shark, *Carcharias glaucus*, a migratory fish, seven to eight feet in length, is an inhabitant of the Mediterranean, as are the White Shark, *C. vulgaris*, twenty-five to thirty feet, and the Hammer-headed Shark *Zygæna malleus*, about twelve feet in length, both these are found in tropical as well as temperate seas. Closely allied to them are the Rays, species of which it is said attain a diameter of twenty feet, and may be occasionally met with basking near the surface of the water.

The Loggerhead Turtle, *Chelonia caretta*, four to five feet in length, inhabits all tropical seas, and may be met with in the Mediterranean; the Leathery Turtle, *Sphargis coriacea*, which sometimes attains a larger size, eight feet, has the surface of the shell covered with a leathery skin instead of the usual horny plates. It was the dessicated seven-ridged shell of this species which according to the old Greek legend was discovered on the shore by Hermes, who, stretching the dried tendons across it, invented the lyre, and by its melody assuaged the anger of Apollo.

For greater convenience we here depart from the natural arrangement, and instead of the birds, which, from certain singular affinities, should follow the reptiles, we notice the few Cetacea which may possibly present themselves. In early books on natural history whales were regarded as fish; they are mammals belonging to the sub-class *Placentaria*, and though strictly aquatic in their habits, they are true mammals, they breathe by means of lungs not gills, they have warm blood, and, like the thick-skinned land animals to which they are related, they suckle their young. The Cetacea are divided into three easily recognized groups; in the first are the "Whalebone-whales" of which *Balæna Australis*, an inhabitant ot the great southern ocean, is an example, it may be known by the absence of a dorsal fin; and *B. musculus* which has a dorsal fin, and which inhabits the Mediterranean, occasionally attaining a length of eighty feet. In the second group are the Whales which carry no whalebone, but have conical teeth in the lower jaw; they are represented by the "Sperm Whale," *Physeter macrocephalus*, which has a huge truncated head fully one-third of the entire length of the animal, and is most frequently seen in the Southern Ocean. The third group comprises the *Delphinidæ* or "Dolphins," in which the head, instead of being one-third or one-fourth, is about one-seventh of the total length, the body is, therefore, more fish-like, and as these animals inhabit the open sea often far from land, it is no wonder that they should long have been regarded as true fishes. The commonest species, the "Porpoise," *Phocæna communis*, is found in every sea and frequently ascends the mouths of rivers in search of food; it is from four to eight feet in length, has a dark back, white belly, and pointed snout. The "Grampus," *P. orca*, a nearly allied species, attains a length of eighteen feet. The "Round-headed Porpoise," *P. melas*, may be distinguished by its round-ended head, it attains a length of about twenty feet. The true "Dolphin," *Delphinus delphis*, six to eight feet in length, has a somewhat prominent forehead which causes the prolongation of the jaw to resemble a snout. Closely allied is the "Narwhal" or Sea Unicorn, *Monodon monoceros*, fifteen feet in length. The Dolphins are all active in their habits, and may frequently be seen gambolling in a playful manner about a passing ship, or chasing the unfortunate Flying-fish, often throwing themselves out of the water in their pursuit. The "Dugong," *Halicore cetacea*, which has the upper jaw curiously bent downwards in front of the lower jaw, is herbivorous, and is found in the Red Sea and on the shores of the Indian Ocean.

Among the numerous Birds which will be observed during the long voyage to and from Australia, it is not improbable that some species of land birds on migration, or driven to sea by stress of weather, will approach or even seek temporary refuge on a passing ship; but this occurrence must be regarded as accidental, and it would unduly extend our notes if we attempted to describe the swallows, finches, &c. which may or may not appear. We only include in our list such land birds as may possibly be seen when passing through the Suez Canal and the gulf of Arabia; all others we describe are *ocean birds*, i.e., birds which make their homes upon the sea, rarely visiting the land except during the breeding season; and *coast birds*, which though often wandering many miles in search of food, yet return at nightfall to their resting places upon the shore.

Our list does not profess to be an exhaustive one, nor are our descriptions of the different species such as would satisfy a scientific ornithologist; we have only attempted to point out such peculiarities in form, or size, or colour as are most noticeable, and will best assist in identification; avoiding, as far as possible, the use of scientific terms, but giving for future reference the special as well as the common or trivial names. So far as is practicable we have adopted the arrangement and nomenclature of Seebohm's *British Birds.* This and the last edition of Yarrell's *British Birds*, Gould's *Birds of Australia*, Sharpe and Dresser's *Birds of Europe*, and Shelley's *Birds of Egypt*, have all been consulted, as well as some important papers by Mr. Howard Saunders, in the *Ibis*, and Proc. Zool. Socy., and the authorized Reports of the *Challenger* Expedition, &c., &c.; and we may add that many of the descriptions have been corrected by the examination of specimens preserved in our great National Collection, and in some cases with living or more recent examples. The writer would be the last to assume that no errors have crept in, but he believes that his notes may be generally accepted as correct.

ORDER ACCIPITRES. FAMILY FALCONIDÆ.

1. Griffon Vulture. *Vultur fulvus.* Head and neck covered with white down; dullish white ruff round lower part of neck; general plumage yellowish-brown; broad wings, short tail; seen in flocks; Egypt. (42—48 in.)

2. Egyptian Vulture. *V. percnopterus.* Head and throat bare, yellowish flesh colour; general plumage white, with black edge to wings, which when they are open shews like a dark band; general plumage of immature bird is dark brown; Egypt; seldom seen in flocks, mostly in pairs. (26—29 in.)

3. Osprey. *Pandion haliaetus.* Crest and nape white, streaked with brown; general plumage, upper, dark brown; under, white, with light brown band across the breast; long wings and tail; English Channel, rare; winters in North Africa, Egypt, and Nubia, and on islands in the Indian Ocean. When in flight the legs are extended in a straight line behind; the greater proportionate length and the curvature of the wings will distinguish it from other hawks. (22 in.)

4. Egyptian Kite. *Milvus Ægyptiacus.* General plumage brown; head and neck grey; the forked tail is crossed by nine or ten bars; beak and legs yellow; Egypt, common. (24 in.)

5. White-tailed Eagle. *Haliaëtus albicilla.* General plumage brown or ashy-brown tail white and rounded at the end; female rather larger; Egypt, Lake Menzaleh. (18 in.)

6. Sparrow-hawk. *Accipiter nisus.* General plumage slaty or rufous-brown, with darker bars: Egypt, common. (12—15 in.)

ORDER PASSERES. FAMILY CORVIDÆ.

7. Raven. *Corvus umbrinus.* "Noah's Raven." General plumage black; head and neck very dark brown; Egypt, Nubia. (22—23 in.)

8. Hooded Crow. *Corvus cornix.* **Head, wings, and tail black; rest of plumage grey estuary of Thames, Egypt; common. (18—20 in.)**

9. Rook. *Corvus frugilegus.* **Wholly black; England, Egypt. (18—21 in.)**

10. Jackdaw. *C. monedula.* **May be distinguished from last by grey, sometimes almost white collar, and more rapid action of the wings; English Channel, Mediterranean, not recorded in Egypt. (14 in.)**

FAMILY STURNIDÆ.

11. Starling. *Sturnus vulgaris.* **General plumage dark; winter visitant in Egypt to end of March; seen in flocks. (8—9 in.)**

FAMILY HIRUNDINIDÆ.

12. Common Swallow. *Hirundo rustica.* **General plumage teel-blue and brown above under parts white; a winter visitant in Egypt, or seen on migration. (8 in.)**

13. Egyptian Swallow. *H. riocourii.* **Differs from last in having under surface chestnut-brown; resident and common in Egypt. (7 in.)**

14. Sand Martin. *H. riparia.* **Upper parts mouse-colour and brown; under parts white; Egypt; winter visitant to end of March. (5 in.)**

ORDER PICARIÆ. FAMILY CYPSELIDÆ.

15. Swift. *Cypselus pallidus.* **General plumage greyish-brown, is lighter in colour and smaller than Common Swift; Egypt and Nubia. (6½ in.)**

ORDER COLUMBÆ. FAMILY COLUMBIDÆ.

16. Rock-dove. *Columba livia.* **General plumage slate-colour, lower back and rump white; in flight a black bar crosses the wings; Egypt and Nubia, common. (14 in.)**

17. Turtle-dove. *Turtur auritus.* **General plumage ash-colour, inclining to brown; shoulders and wing coverts black; at sides of neck are rows of black feathers with white margins; under parts white; Egypt, in the spring. (11½ in.)**

18. Sharpe's Turtle-dove. *T. sharpii.* **(Described by Shelley. ? the *T. isabellinus* of Seebohm.) Like the last, but no blue shading on head or back; Egypt earlier in year than *auritus* (11—11½ in.)**

ORDER HERODIONES. FAMILY ARDEIDÆ.

19. Heron. *Ardea cinerea.* **Head white; long bluish-black plumes from the crest; neck white with dark grey markings; long white and grey feathers hide the breast; a black border to outer wings; Egypt. (60 in.)**

20. Great White Egret. *A. alba.* Plumage white; short plumes from crest; Lake Menzaleh, Egypt; in flocks. (40 in.)

21. Little Egret. *A. garzetta.* Plumage white; crest of two long white feathers; Egypt; singly or in pairs. (23—25 in.)

22. Buffed-back Heron. *A. bubulcus.* Plumage white; buff tints on head, neck, and breast; no long crest feathers; rufous-buff feathers hang from neck in front; Egypt; in flocks. (20 in.)

23. Spoonbill. *Platalea leucorodia.* General plumage white; long black bill, yellow and spoon-shaped at end; Egypt; in flocks on the marshes. (32 in.)

24. Glossy Ibis. *Ibis falcinellus.* Upper plumage dark green, under surface a reddish-brown, bill long and narrow and curved downwards; supposed to be the "Black Ibis" of early writers; Egypt, &c. (24 in.)

25. Sacred Ibis. *I. religiosa.* General plumage white; head and neck black (without feathers); feet black; Egypt.

26. White Stork. *Ciconia alba.* General plumage white; lower half of wings black; bill and legs red; no long crest feathers; a stouter bird than the heron; Egypt, in large flocks. (42—44 in.)

27. Black Stork. *C. nigra.* General plumage black; under parts white; Egypt, singly or in pairs. (40—42 in.)

ORDER ALECTORIDES. FAMILY GRUIDÆ.

28. Crane. *Grus cinerea.* General plumage slaty-grey; pendant plumes cover the tail and are darker at the ends; Egypt, October to March. (48 in.)

ORDER LIMICOLÆ. FAMILY CHARADRIIDÆ.

This family includes a large number of what are known as marsh and wading birds—the Plovers, Avocets, Oyster-catchers, Curlews, Snipes, &c.—but it is hardly possible, without illustrations, so to describe the several species which may be seen in passing the Suez Canal, or along the Red Sea, that the bird or flock of birds may at once be named. They have mostly long pointed wings, unwebbed or partially webbed feet, with a minute elevated hind toe; there are about two hundred species.

29. Oyster-catcher, or "Sea-pie." *Hæmatopus ostralegus.* Black above; white below; with a white bar on the wing; and deep orange bill; may be met with anywhere from the English Channel to the Red Sea. (14—16 in.)

30. Sooty Oyster-catcher. *H. fuliginosa.* Bright orange bill; whole plumage sooty black legs and feet brick-red; South Australian seas. (15 in.)

31. Ringed Plover. *Charadrius hiaticula.* Dark grey plumaged above; white below, with black band across the breast; when in flight a continuous white bar is seen across the wings. A winter visitor in North Africa. (7½—8 in.)

32. Golden Plover. *C. pluvialis.* Summer plumage black, upper parts spotted with gold; in winter the underparts are white, breast and sides mottled with greyish-brown. Same. (9½ in.)

33. Grey Plover. *C. helveticus.* Summer plumage black, upper parts spotted grey and white; winter plumage, under parts ashy-brown and white. Same. (12 in.)

34. Lapwing or Peewit. *Vanellus cristatus* General plumage, dark green or black above, under parts white; has crested feathers at the back of the head slightly turned upwards. Winter visitor to North Africa. (12—13 in.)

35. Nile Plover. *Cursorius œgyptius.* Long legs; short, pointed bill; and black mantle; may be easily distinguished. (13 in.)

36. Avocet. *Recurvirostra avocetta.* Has webbed feet; black patches on the head, back, and wings; white under surfaces; and the long bill curved upwards. Breeds in Palestine and Persia. (17—18 in.)

37. Stilt. *Himantopus melanopterus.* Bill black; back and wings nearly black tinged with green; head, neck and under parts white, with rosy tinge; legs (long) and toes pink. (13 in.)

38. Curlew. *Numenius arquatus.* General plumage brown, with paler markings, darker on the back; legs and toes pale blue; the long dark brown bill curves downwards. Egypt in winter. (20—21 in.)

39. Whimbrel. *N. phœopus.* General plumage closely resembles the Curlew, is less common and of smaller size. In winter as far as Aden. (15—17 in.)

40. Sandpiper, "Summer-snipe." *Totanus hypoleucus.* Upper plumage greenish-brown; under parts white; legs and toes green. (7½ in.)

41. Red-shank. *T. calidris.* Upper plumage ashy-brown, under parts white, if immature with light brown markings; legs and feet orange-red. (10—11 in.)

ORDER GAVIÆ. FAMILY LARIDÆ. TERNS.

The Terns may be distinguished from the Gulls and Skuas (with one exception, Sabine's Gull, not likely to be met with on the Orient route) by their long and more or less forked tails: hence their name, "Sea-swallows." They have long, slender bills, the curvature of the upper mandible scarcely varying from base to tip; long wings, short legs, and small webbed feet; they swim with ease, and have a very graceful flight. The genus contains about fifty species.

42. Black Tern. *Sterna nigra.* General plumage dark slaty-grey, darkest on head; under tail surface white; England, Egypt. (10 in.)

43. White-winged Black Tern. *S. leucoptera.* Dark body; white shoulder, upper tail coverts and tail; Delta of Nile and Red Sea. (9½ in.)

44. Gull-billed Tern. *S. anglica.* General plumage ashen-grey; bill, forehead, crest and nape black; legs and feet reddish black; English coasts to Mediterranean and Red Sea. (About 15 in.) An allied bird, S. *macrotarsa*, frequents the shores of Australia.

45. Caspian Tern. *S. caspia.* Bill scarlet, yellow at sides; general plumage as the last, but neck, breast, under parts and tail white; claws strong and curved; a larger and heavier bird than S. *anglica*; a coast bird from England to Australia; probably identical with the S. *strennus* of Gould. (18—20 in.)

46. Sandwich Tern. *S. cantiaca.* General plumage, upper parts pearl-grey, under parts white; bill black, with yellow tip; forehead, crest and nape, legs and feet, black; ranges far from land; may be met with anywhere. (15 in.)

47. Roseate Tern. *S. dougalli.* General plumage as the last, but has a delicate rose-colour tinge on whole under surface, and is of a slighter and more elegant form; short wings; long tail, the fork varying from 3½ to 6 inches; Atlantic, Indian Ocean, rare. (? the S. *gracilis* of Gould.) (15—17 in.)

48. Common Tern. *S. hirundo.* In general plumage resembles the Sandwich Tern, but the bill is orange red with a black tip, and legs and feet are red; fork of tail 1½ to 3 inches; Atlantic, Mediterranean, possibly Egypt. (14—14½ in.) It is represented in the Red Sea as far south as Ceylon, by S. *albigera*, a rather slighter bird, with smoky plumage, darker on rump and tail.

49. Little Tern. *S. minuta.* General plumage, upper parts pearl-grey; tail, rump and under surfaces white; black head and nape; white forehead; is nowhere abundant. (8 in) An allied species, S. *sinensis*, frequents the Red Sea. The Australian form is the *Sternula nereis* of Gould. (10 in.) Bass' Straits, &c.

50. Sooty Tern. *S. fuliginosa.* Upper plumage brownish or dull black; forehead, chin and whole under parts grey or white; bill, legs and feet black; may be met with anywhere on the voyage; is known to breed in, among other places, the Red Sea. (14—16 in.)

51. Noddy Tern. *S. stolida.* Uniformly black or dull brown; an inter-tropical species whose range extends almost round the world. (14 in.)

52. Black-naped Tern. *S. melanauchen.* Upper plumage pearl-grey, with gorget-shaped black mark on nape; bill, legs and feet black; south coast of Australia. (13 in.)

53. White Tern. *Gygis candida.* A small snow-white Tern with black bill; orange legs and feet; and large black eyes; south coast of Australia. (9 in.)

54. Scissor-bill Tern. *Rhynchops flavirostris.* Described by Shelley as occurring in Egypt; brown above, forehead and under surface white; orange-red feet and bill; the under mandible one-third longer than the upper. (17 in.)

Gulls, a genus containing about fifty species, may be distinguished from Terns and Skuas by their square-ended tails; the only exceptions are Sabine's Gull *L. sabini*, which has a forked tail like a Tern, and Ross' Gull, *L. rossii*, which has a distinct cuneate tail like that of a Skua, but neither bird is likely to cross the path of the *Orient*. The bill of the Gull is intermediate between that of the Tern and that of the Skua, which latter is more hooked and has a square appearance, the line of the gape curving rapidly downwards beyond the nostril, whereas in the Gull it appears triangular; again, in Gulls and Terns the nasal aperture is longitudinal, in the Skuas it is diagonal.

55. Little Gull. *Larus minutus.* General plumage, upper surface pale ash-grey, under surface white; in summer head black, bill reddish-brown; in winter bill black, forehead and parts of neck white, crest streaked with black; small flocks, from English Channel to Mediterranean. (10—10½ in.)

56. Black-headed Gull or Laughing Gull. *L. ridibundus.* Summer plumage, head and upper neck dark brown; sides and back of neck white; mantle French-grey; tail and under surfaces white; black edge to wings; bill, legs, and feet red. In winter plumage, head white streaked with grey; common everywhere. (16 in.) The Mediterranean form, *L. melanocephalus*, has a darker head.

57. The Great Black-headed Gull. *L. ichthyætus.* General plumage grey or pearl-grey; bill orange-yellow, having a transverse black bar across it at about two-thirds its length from the head, beyond which the bill is tinged with red; head and upper part of neck black; a white mark behind the eye; one of the largest of the genus; England (rare), Mediterranean, Egypt, Red Sea, coasts of India. (27 in.)

58. The Common Gull. *L. canus.* General plumage white; mantle pearl-grey; bill, legs, and feet yellow; "the Blue Maa"; England to Mediterranean. Although known as the "Common" Gull, this bird is not so frequent as the Herring Gull and the Kittiwake. (18½ in.)

59. Lesser Black-backed Gull. *L. fuscus.* Mantle dark slaty-grey, rest of plumage white; points of wings black with white spots; bills, legs, and feet yellow. Less shy than the other large Gulls. England, Mediterranean (in winter), Red Sea as far as Aden. (23 in.)

60. Great Black-backed Gull. *L. marinus.* General plumage as last, but mantle is darker; ends of wings with white points; bill yellow; legs and feet flesh-coloured. An Atlantic bird; sometimes strays into Mediterranean; may be known by its loud, harsh croak, its long wings, and powerful flight. (30 in.)

61. Pacific Gull. *L. pacificus.* Is the southern form of *L. marinus*, which it resembles in general appearance, but the bill is orange deep-red at tip, and the tail is white, crossed with a broad band of black; coasts of Australia. (29—31.)

62. Herring Gull. *L. argentatus.* Head, neck, and under surface white; mantle French-grey; the long feathers of the wings black with white tips; bill yellow; legs and feet flesh-coloured; immature birds white, spotted brown; English Channel; frequents harbours; has a slow laborious flight. The Mediterranean form, *L. cachinnans*, has a ring round the eye of deep orange-red. (22—24 in.)

63. Jameson's Gull. *L. novæ hollandiæ.* "The Silver Gull," "the Little Gull" of the Colonists. General plumage as the last; points of wings tipped black; bill, legs, and feet blood-red; red mark round the eye; large flocks frequent the southern shores of Australia. (14 in..)

64. Kittiwake. *L. tridactylus.* General plumage white; mantle pale slaty-grey; bill greenish yellow; legs dingy-grey; the commonest of British gulls; frequents Mediterranean as far as Malta; received its familar name from its peculiar cry, " Kitti—aa, Kitti—aa. (15 in.)

The Skuas are distinguished from the Gulls by their wedge shaped tails; the upper mandible of the bill is straight for two-thirds its length, then ends in a strong curved raptorial hook; the nasal aperture is diagonal.

65. Great Skua. *S. catarrhactes.* General plumage dark brown with a white bar upon the wings; legs and feet black with crooked talons; roundish wings and a heavy flapping mode of flight; solitary habits; English Channel, Atlantic, South Indian Ocean, Tasmania. (24—25 in.)

66. Pomarine Skua. *S. pomarinus.* General plumage blackish or dark brown; under surface as far as legs white; the two central tail feathers extend four inches beyond the others and have a curious vertical twist; winter visitor as far south as Mediterranean. (21 in.)

67. Richardson's Skua. *S. richardsoni.* Birds of this species are found on the same breeding ground with entirely different plumage; one form entirely sooty-grey; the other slate-grey with lighter or almost white underparts; its lesser size may distinguish it from the Great Skua; while the central pair of tail feathers, which are three inches longer than the next feathers on each side, are not twisted as are the corresponding feathers in *pomarinus.* (20 in.)

ORDER PYGOPODES. FAMILY ALCIDÆ.

A certain amount of confusion seems inevitable in bird nomenclature. The GENUS PUFFINUS belongs to the FAMILY PROCELLARIIDÆ and is represented by the Shearwaters, while the bird next described, of very dissimilar appearance belonging to the GENUS FRATERCULA, and the FAMILY ALCIDÆ or Auks, is commonly known as "The Puffin."

68. Puffin. *Fratercula arctica.* "Sea Parrot." **General plumage upper surface black; face and under surface white; a black collar round the neck; bill of a curious parrot-like shape, bluish-grey crossed by orange bands; English Channel, common, (6—12 in.)**

69. Razor-bill. *Alca torda.* **Head and upper surfaces black, under parts white; has a narrow upper bill like the blade of a pruning knife, crossed towards the end with a curved white line; a white bar on the wings; legs and feet black; English Channel, Atlantic, Mediterranean as far as Malta. (17 in.)**

70. Black Guillemot. *Uria grylle.* **Summer plumage black, with large white patch on the wing; winter plumage barred with white; underparts white; has a pointed bill; red legs and feet; English Channel. (14 in.)**

71. Common Guillemot. *U. troile.* **General plumage as the Razor-bill, but very short tail nearly straight; pointed bill without white markings; as above. (18 in.)**

FAMILY COLYMBIDÆ.

72. Great Northern Diver. *Colymbus glacialis.* "The Loon." **General plumage black spotted white, under parts white; head neck and bill black; two white bars round throat. English Channel, winter. (30—33 in.)**

73. Black-throated Diver. *C. arcticus.* **Smaller bird, with narrow half collar just below chin. English Channel. (25—26 in.)**

74. Red-throated Diver. *C. septentrionalis.* **Head, face and neck ash-grey; upper surface black speckled white; under surface white; a red conical patch on the throat; from mouth of the Thames to Mediterranean, has been seen in Egypt. These birds have a singular power of sinking into the water before diving; it is performed by a rapid action of the feet, until little more than the head and neck are visible, when they bend the head forward and disappear. (23—24 in.)**

ORDER TUBINARES. FAMILY PROCELLARIIDÆ.

Gould, in speaking of this family, observes that "there is perhaps, no group of birds respecting which so much confusion exists, and the extent of whose range over the ocean is so little known." He has described thirty-three species as peculiar to the southern hemisphere, at the head of which he places the Genus DIOMEDEA; these are all oceanic birds, *i.e.*, they rarely visit the land except during the breeding season, and feed principally on *Medusæ*, *Physalia*, &c., or on the offal thrown overboard from passing ships. They possess extraordinary powers of flight; day after day will the same birds attend a vessel, sailing and wheeling about in every direction without ever alighting to rest; the larger species often soaring for an hour or more without any apparent motion of the wings. (The nomenclature of these birds and of all southern species is that of Gould, who however rarely gives the length of the bird.)

75. The Wandering Albatross. *Diomedia exulans.* "The Goney." Mature birds, white with black pinions; bill pale yellow, upper mandible hooked at the point the nasal apertures on each side of the bill are protected by short tubes. Immature birds, freckled or barred dark brown, but with white face; legs and feet pinky white; length 3—4 feet, across wings 10—11 feet. Examples have been recorded 13, and in one instance more than 17 feet across the wings.

76. Short-tailed Albatross. *D. brachyura.* Not so large, but closely resembles *exulans;* has short, truncated tail. Immature birds are chocolate-brown. Is met with north of the equator. (2½—3ft. in.)

77. Shy Albatross. *D. cauta.* Head, neck, throat, under surface, and upper tail-coverts white; mantle and tail greyish brown; yellow line along the top of the bill (the culmen) and at base of lower mandible. (30—31 in.)

78. Culminated Albatross. *D. culminata.* As the last, but darker mantle and tail; bill black, with yellowish horn-coloured culmen and tip; same along lower edge of under mandible; a grey-black mark around the eye. (30 in.)

79. Yellow-nosed Albatross. *D. chlorhorhynchus.* As the last, immature birds have darker plumage; tail slate colour, with white shafts; bill black, culmen bright orange yellow, the yellow line extends back almost to the eye; bird about the size of a Goose; its only known breeding-place is the island of Tristan da Cunha; both this bird and the next are the "Mollymauk" of the sailors. (Voyage of the *Challenger.*) (30—34 in.)

80. Black-browed Albatross. *D. melanophrys.* General plumage white; the dark mantle forms a distinctive mark, like a black band, across back and wings; before, above, and behind the eye is a streak of dark grey.

81. Sooty Albatross. *D. fuliginosa.* General plumage deep sooty-grey; a white mark round the eyes; bill black, with a line of white cartilage along the top; tail wedge-shaped; less heavily built than others of the species; its evolutions in flight are performed with greater ease, and it has a habit of poising itself directly above the ship.

The Petrels form a well defined group comprising about a hundred species; varying in size from the Giant Petrel, with a spread of wing more that six feet across, to the Mother Carey's Chicken, six inches in length, the smallest web-footed bird known. They have, in proportion to their size, long wings, short tails, and bills hooked at the end; while the nasal tubes lie together on the upper part of the bill, instead of on each side, as in the Albatrosses.

82. Great Shearwater. *Puffinus major.* General plumage, upper parts dark brown, under parts white; a conspicuous patch of white above the tail; bill black; legs and feet dull red; flies with wings much bent close to the water; English Channel to Mediterranean. (14—18 in.) An allied species, *P. kuhli*, is found in the Mediterranean; it has both upper and under tail-coverts white.

83. Manx Shearwater. *P. anglorum.* Upper parts dark slaty-brown, under parts white; feet slaty-grey and white. (14 in.) "These birds," says Seebohm, "fly close to the surface of the water, in an almost perfectly straight line, one behind the other, and at an incredible speed; every muscle seems to be strained; they hurry along as if the furies were behind them, and hence have acquired among the Levantines the sobriquet of 'âmes damnées.'"

84. Australian Shearwater, or Allied Petrel. *P. assimilis.* Allied to *anglorum*, but is a smaller bird; South Australia, Bass' Straits. (11 in.)

85. Short-tailed Shearwater. *P. brevicaudus.* The "Short-tailed Petrel" "Sooty Petrel," or "Mutton-bird"; the whole plumage sooty-brown; bill black; legs black with yellow webs; South Australia. (11—13.)

86. Flesh-footed Shearwater. *P. carneipes.* Has light flesh-coloured bill and legs; South Australia, (11—13.)

The Fulmar Petrels are large birds; the wings long and pointed; the tail short and round; the bill short, the nasal tubes extending about half its length; ocean birds; their flight resembles that of the Gull. The only species likely to be met with by the Orient voyager is the

87. Fulmar Petrel. *Fulmarus glacialis.* Head, neck, breast and under surfaces white; rest of plumage pearl-grey; upper mandible horn-coloured with yellow end; lower mandible reddish; English Channel, Mediterranean. (19 in.)

88. Giant Petrel. *Procellaria gigantea.* Entire plumage dark chocolate brown; bill a conspicuous light horn colour with rufous tinge at the point; a large bird; its spread of wing, six feet to six feet six inches; this is the bird known as "the Cape Hen," "Nelly," "Mother Careys Goose"; is sometimes mistaken for an Albatross, but its flight is more laboured and it is a shyer bird; south latitudes.

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OMMANDER T. A. HULL, R.N.

nces by way of the Cape of Good Hope are as under:—

	PLYMOUTH.								
...	2,252	St. Vincent.							
...	6,202	3,950	Table Bay.						
...	6,622	4,370	420	C. Recife.					
...	11,266	9,014	5,064	4,644	C. Leeuwin.				
...	12,448	10,191	6,241	5,821	1,177	Adelaide.			
...	12,941	10,689	6,739	6,319	1,675	498	Melbourne.		
...	13,517	11,265	7,315	6,895	2,251	1,074	576	Sydney.	
Calling at Madeira, instead of St. Vincent.									
...		2,252	5,909	6,329	10,978	12,150	12,648	13,224	
...	1,210	1,042	4,699	5,119	9,768	10,940	11,488	12,014	

in.

K. G. Sound.												
909	C. Borda.											
1,019	110	Adelaide.										
1,071	162	52	C. Jervis.									
1,266	357	247	195	C. Northumberland.								
1,411	502	392	340	145	C. Otway.							
1,475	566	456	404	209	64	The Heads.						
1,517	608	498	446	251	106	42	Melbourne.					
1,559	650	540	488	293	148	84	42	The Heads.				
1,661	752	642	590	395	250	186	144	102	Wilson's Promontory.			
1,856	947	837	785	590	445	381	339	297	195	C. Howe.		
2,018	1,104	994	942	747	602	538	496	454	352	157	St. George Head.	
2,098	1,184	1,074	1,022	827	682	618	576	534	432	237	80	SYDNEY.

bo and King George's Sound, 3,355.

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89. Spectacled Petrel. *P. conspicillata.* Entire plumage sooty-black except chin, sides of face, and a white band nearly surrounding the eye and crowning the forehead, looking like a pair of large white spectacles; bill and nasal tubes light horn colour; black legs and feet; south latitudes.

90. Great Grey Petrel. *P. hæsitata.* General plumage brownish-grey; under surfaces white; bill whitish horn; feet bluish-white; in action and flight this bird resembles the Albatross; like all Petrels it flies with its long legs stretched out behind, giving a forked appearance to the tail.

91. White-headed Petrel. *P. lessonii.* Forehead, face, all under surfaces and tail white; mantle brown, darker on the wings; bill black; legs and feet flesh white; webs black; a black mark round and before the eye; when on the wing the white face contrasts with the dark w-shaped wings; Bass' Straits.

92. White-winged Petrel. *P. cookii.* Crown of head and all upper surfaces dark slaty-black; all under surfaces, together with under surface of the wings, white; bill black; legs and feet fleshy white; Bass' Straits. (13 in.)

Of the smaller birds familiarly known as Petrels, and which vary from six to ten inches in length, ten species are known, three of which are British; they are most numerous in the southern seas. Buffon suggested that their habit of paddling on the water, as if walking, obtained for them the name of Petrel after the Apostle St. Peter, the derivation being *Pierre, pierrot, ou petit pierre.*

93. Storm Petrel. *P. pelagica.* "Mother Carey's Chicken." General plumage black; under parts rather lighter; outer edge of wing, upper tail coverts, and sides of vent white; is the smallest web-footed bird known; Atlantic and British Seas. (6 in.)

94. Grey-backed Storm Petrel. *P. nereis.* General plumage sooty-black; has no white mark on the rump, but is grey along middle of wings and upper part of tail; belly and under wings white; Bass' Straits. (6½ in.)

95. Fork-tailed Petrel. *P. leachii.* General plumage sooty-black with white above the tail which has a long fork; Atlantic, strays into Mediterranean. (7½ in.)

96. Wilson's Petrel. *P. wilsoni.* Similar general colouring, but has a square tail with a curved line of white across its upper part; white round the vent; feet black with oblong yellow patch on each web; Australian and Indian Seas as far north as the Equator. (7½ in.) The Yellow-webbed Petrel. *Thalassidroma oceanica,* described by Gould as frequenting southern seas, is probably a variety of *wilsoni.*

97. Black-bellied Petrel. *Thalassidroma melanogaster.* General plumage deep sooty-black; the occurrence of white on the flanks gives the effect of a broad dark band down the centre of the belly; South Indian Ocean. (7½ in.)

98. White-bellied Petrel. *T. leucogaster.* Resembles last, but the dark band is wanting. The action of both these birds is described as that of "fluttering like a butterfly." South Indian Ocean. (8 in.)

99. Blue Petrel. *P. cærulea.* Ash-grey above; white below; may be known by the conspicuous white tips of central tail feathers; South Australia.

100. Cape Petrel. *Daption capensis.* "Cape Pigeon." Wing coverts, back, upper tail coverts and under surface of wing white; rest sooty-brown; bill and feet blackish-brown; common in south latitudes.

The Prions, oceanic birds, only resorting to the land during the breeding season, are distinguished by their broad bills and delicate grey colouring. Their plumage is thick and downy, making the birds look larger than they really are. They are a strictly southern form, associating generally in large flocks. Only four species are known, all of which may be met with in the South Indian Ocean or in Australian seas.

101. Dove-like Prion. *Prion turtur.* Upper surface delicate blue-grey; under surface white; edge of shoulder, outer margins of wings and tips of tail feathers black; when the wings are expanded these marks form the letter W; bill light blue, black at sides and tip; legs and feet light blue. (10—12 in.)

102. Fairy Prion. *P. ariel.* Like the last, but smaller; has no grey mark before the eye. (9 in.)

103. Bank's Prion. *P. banksii.* Resembles *turtur*, but has a larger and darker-coloured head. (10—12 in.)

104. Broad-billed Prion. *P. vittatus.* Edge of shoulder, outer margins of wings and end of tail slaty-grey; bill broad at the base. (12—13 in.)

ORDER ANSERES. FAMILY ANATIDÆ.

105. Mute Swan. *Cygnus olor.* Does not need description; the anterior portion of the bill rich reddish-orange, the base to the eye black; has a prominent black knob upon the forehead. (56—60 in.)

106. Hooper Swan. *C. musicus.* Anterior portion of the bill is black; the base and from base to eye orange-yellow; the black knob is wanting; both species are winter visitants in Egypt and in Mediterranean. (60 in.)

107. Black Swan. *C. atratus.* General plumage brownish-black, with white markings upon the wings, which in flight contrast with the dark colour of the body; bill red with black tip; no knob; South Australia.

108. Bean Goose. *Anser segetum.* General plumage dark brown; orange red-legs and feet; orange bill marked with black and black tip. (34 in.)

109. Grey Lag Goose. *A. cinereus.* General plumage brown, with darker stripes on neck and mottled wings; flesh-coloured bill and feet. (34—36 in.)

110. White-fronted Goose. *A. albifrons.* General plumage as above; white feathers at base of bill and on forehead; darker bands across the breast. (27 in.) All three birds are winter visitors in Egypt.

111. Flamingo. *Phœnicopterus roseus.* General plumage white with a rosy tint; legs and feet pink; bill pink for two-thirds its length, the rest jet black; Egypt, in flocks. Easily recognized by its long legs and neck, and curiously bent bill.

There are about sixty species of Ducks, eight or ten of which may be perhaps seen on migration in the English Channel, in the Mediterranean, or in the lakes of lower Egypt; some even as far south as the Red Sea. Though several species are found on the continent of Australia, they do not seem to have been so frequently observed at any distance off the coast. Their flight is straight and swift, and once recognized will not easily be mistaken. The Mallard, *Anas boschas*, from which the common farm-yard duck is descended, may be regarded as the representative of the genus; the Australian form is *Anas superciliosa.* Of the rest perhaps the most readily distinguished will be the

112. Ruddy Sheld-drake. *Anas rutila.* General plumage orange-brown; buffy-white on shoulders; points of wings and tail black; a black ring round the neck; resident in Egypt. (25—26 in.)

113. Common Sheld-drake. *A. cornuta.* Glossy green head and neck; white collar; broad chestnut belt across shoulders and breast; dark brown central line along breast and belly; English Channel, Egypt. (24—26 in.)

114. Shoveller. *A. clypeata.* Dark green head and neck; a broad spoon-shaped bill; Egypt and Red Sea. (20 in.)

115. Wigeon. *A. penelope.* Head chestnut, creamy white on the crown; chin and breast chestnut; winter visitant in Egypt. (18 in.)

ORDER STEGANOPODES.—FAMILY PELECANIDÆ.

The most obvious external characters of the *Pelecanidæ* are their webbed feet, in which the hind toe is connected with the inner one by a web; their long and powerful wings and distensible gular pouch.

116. Red-tailed Tropic Bird. *Phaëton phœnicurus.* The "Bosun (Boatswain) Bird." General plumage silky-white, with a roseate tinge especially upon the back; in the adult is a broad crescent of black before each eye; flank feathers black; the long central tail feathers are white at the base, and red for the remainder of their length; South and Indian Ocean; hovers round the ship, occasionally settles on the rigging.

FAMILY SPHENISCIDÆ.

117. Little Penguin. *Spheniscus minor.* General plumage, upper surface light blue with a black line down the centre of each feather; under surfaces white; swims low in the water with great vigour; is incapable of flight; South Australia.

118. Gannet. *Sula bassana.* "Booby," "Solent," or "Channel Goose." General plumage white; black points to wings; bill horny-white; gular pouch slightly indicated; immature birds brownish-grey; feeds on fish which it captures by making a sudden descent, often from a considerable height; English Channel, Atlantic, and Mediterranean (in winter). (34—36 in.)

119. Australian Gannet. *S. australis.* Resembles the last; is seen chiefly on the northern coast of Australia; notice in both birds the peculiar angular appearance of the wings in flight. (34—36 in.)

120. Black Cormorant. *Phalacrocorax carbo.* General colour dark bottle green, bare part of face and throat yellow; in breeding plumage, a white patch on thigh; bill sharply hooked; English Channel. (36 in.)

121. Green Cormorant or Shag. *P. graculus.* General plumage dark green; no white patch on thigh; English Channel. (27 in.)

122. New Holland Cormorant. *P. novæ-hollandiæ.* The southern form of *carbo*; in its summer plumage the throat and sides of face are buffy-white. (34—36 in.)

123. Pied Cormorant. *P. hypoleucus.* Has sides of face and all under surface white; common on south coasts of Australia; these birds fly strongly, with rapid action of the wings, and neck outstretched, following behind one another in a straight line. (33—35 in.)

124. Frigate bird. *Tachypetes minor.* "Man-of-War Bird," "Man-of-War Hawk." **General plumage brownish-black; orbits and gular pouch deep red; very long wings and tail; the falcons of the sea; like the Skuas, they attack Terns and Gulls, forcing them to disgorge their prey which by rapid flight they catch before it reaches the water. South and tropical Australian shores.**

125. Pelican. *Pelecanus onocratalus.* **A large bird five to six feet in length, with expanse of wings twelve or more feet; white plumage tinted rose colour; easily recognised by the large gular pouch; in flocks; Lake Menzaleh, &c.**

The above list might have been considerably extended, and doubtless further observations, made perhaps by the passengers themselves, and kindly communicated to the author, will supply omissions and corrections which may appear in some future edition of the Orient Guide.

THE STARS.

There are few more interesting and attractive studies than a careful observation of the stars on a clear night. On board ship, as distinguished from shore life, the majority of passengers will be found to prefer the deck and cool fresh air of the tropical evening to the closer atmosphere of the saloons; and voyagers have thus almost forced upon them the manifold beauties of the heavens at night, or as Shakespeare makes Hamlet call it "this brave o'erhanging firmament, this majestical roof fretted with golden fire!" A little geology may have given the thinking passenger some idea of the ball on which he lives. A similar acquaintance with astronomy may enable him to form a faint comprehension of the mighty sphere in which that ball, the earth, is placed. The stars alone will tell him of the universe; that "stupendous whole" in which our entire Solar System all but loses its entity, and to the vast majority of the stars is nought but the point of the mathematician, "that which has no parts, or which has no magnitude."

Men of every age and of every clime as the Psalmist writes, have "considered the heavens," have seen the stars "declare the glory of their Maker," have heard "day unto day utter speech, and night unto night shew knowledge." For though "there is no speech nor language," and "their voice cannot be heard," yet "their rule is gone out through all the earth, and their words to the end of the world."

The Hindu beheld:—

"System on system, countless worlds and suns,
The silver islands of a sapphire sea;
Shoreless, unfathomed, undiminished,
Measureless, unto speech,—
He saw those lords of light who hold their worlds
By bonds invisible, how they themselves
Circle obedient round mightier orbs
Which serve profounder splendours, star to star
Flashing the ceaseless radiance of life."

Contemplating the magnificence of the stellar universe, the spirit of the Chaldean is carried back to the fastening of its foundations, when "the morning stars sung together, and all the sons of God shouted for joy." He perceives that the earth is hung upon nothing, and asks, "Canst thou bind the sweet influences of the Pleiades, or loose the bands of Orion?" The Egyptian found his almanac, the Zodiac, in the starry girdle about the sun's path. The Greek figured upon the shield of his hero:—

"The ever-circling sun and full-orbed moon,
And all the signs that crown the vault of heaven;
Pleiads and Hyads, and Orion's might,
And Arctos, called the Wain, who wheels on high
His circling course."

The Arab, in what has been called "The trumpet text of the Koran," enquires "The heavens and the earth and all that is between them; think ye we have created them in jest?" The Swede beheld nature "wreathing through an everlasting spiral, with wheels that never dry, on axles that never creak." The great poet of our country tells:—

"How the floor of heaven
Is thick inlaid with patines of bright gold:
There's not the smallest orb which thou behold'st
But in his motion like an angel sings,
Still quiring to the young-eyed cherubim:
Such harmony is in immortal souls:
But whilst this muddy vesture of decay
Doth grossly close it in, we cannot hear it."

Another Englishman feels:—

> "How beautiful is night! The balmiest sigh
> Which vernal zephyrs breathe in Evening's ear
> Were discord to the speaking quietude
> That wraps this moveless scene. Heaven's ebon vault,
> Studded with stars unutterably bright,
> Seems like a canopy which Love has spread
> To curtain her sleeping world."

While the German saw, that "over us with constant kindly smile, the sleepless stars keep everlasting watch."

From the earliest ages stars have been grouped together into constellations named for the most part after some fancied resemblance to animals. The stars forming these clusters are tabulated in the order of their brightness in each constellation, the principal stars being denoted by letters of the Greek alphabet. A letter, followed by the name of the constellation in Latin, thus, α, or Alpha, Lyræ, denotes the brightest star in the Lyre: β Aquilæ, the second brightest in the Eagle, and so on. The order of brilliancy is, however, not strictly adhered to. Some of the more conspicuous are further individualised by time-honoured names, chiefly Arabic. (See page 243.) The identification of individual stars, a necessity to the navigator, forms a pleasing and attractive study to the passenger. No more pleasant observatory can be conceived than a comfortable deck-chair on an Orient mail-steamer in the balmy tropics.

Considering the heavens by night at first induces a feeling of wondering bewilderment at the multitude, and apparently inextricable confusion of the stars. But the unchangeableness of their positions has enabled them to be mapped out from a remote antiquity.

The best method of forming an acquaintance with the stars is to confine the attention at first only to the brightest; and the observer will be astonished to find how soon the map of the celestial concave will become familiar to him. It is obvious that certain stars can be seen only from certain parts of the earth. If by means of a celestial globe we represent the heavens as they appear to a spectator residing at the earth's equator, by placing the poles in the horizon, it will readily be seen that all the stars will be visible to that spectator in the course of the year. If, on the other hand, we elevate either the North Pole to the latitude of London, or the South Pole to the latitude of Melbourne, it will be equally manifest that certain stars in the southern hemisphere are never seen in London, nor others belonging to the northern hemisphere in Melbourne. Four maps have therefore been given to assist passengers in their study of the stars, viz., two polar and two equatorial, by which means a fair representation of the heavens is given for any season of the year, or for any part of the world.

The celestial sphere, like the terrestrial ball, has poles and equator, which are simply the poles and equator of the earth, extended to the celestial concave. In addition to these, on the celestial globe, the *great circle* (see page 257) known as the Ecliptic, or sun's apparent path among the fixed stars, with its poles, is also marked.

The Ecliptic is so named because eclipses can occur only when the moon is on or near this great circle.

The Zodiac is a zone or belt in the heavens 16° in breadth, with the ecliptic running through its middle. The Zodiac may be described as the high road of the sun, moon, and planets among the fixed stars; as in this belt, the planets visible to the naked eye will always be found. The name is derived from *ζώδιον* the diminution of *ζῶον*, "an animal," because the constellations in the zone were, with one exception (Libra, the balance), figured by the ancients as animals. The Ecliptic, and therefore the Zodiac, is divided into twelve equal parts; the beginning of every part, known as "the first point" is marked by the "sign" or symbol of each; these are taken from the constellations which were situated in them at the time when the names were given. (See page 236.) They are as follows:—

Northern Signs.

♈ *Aries*, the Ram.
♉ *Taurus*, the Bull.
♊ *Gemini*, the Twins.
♋ *Cancer*, the Crab.
♌ *Leo*, the Lion.
♍ *Virgo*, the Virgin.

Southern Signs.

♎ *Libra*, the Balance.
♏ *Scorpio*, the Scorpion.
♐ *Sagitarius*, the Archer.
♑ *Capricornus*, the Goat.
♒ *Aquarius*, the Water-bearer.
♓ *Pisces*, the Fishes.

On the star maps it will be seen that the ecliptic cuts the celestial equator obliquely in two of these points, viz., ♈ and ♎, the first point of Aries, and the first point of Libra, known as the Equinoctial Points; because when the sun is at these points the days and nights are equal all over the world. A great circle called the

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COMPILED BY
COMMANDER T.A.HULL R.N.

The months marked round th
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map and then looking in th
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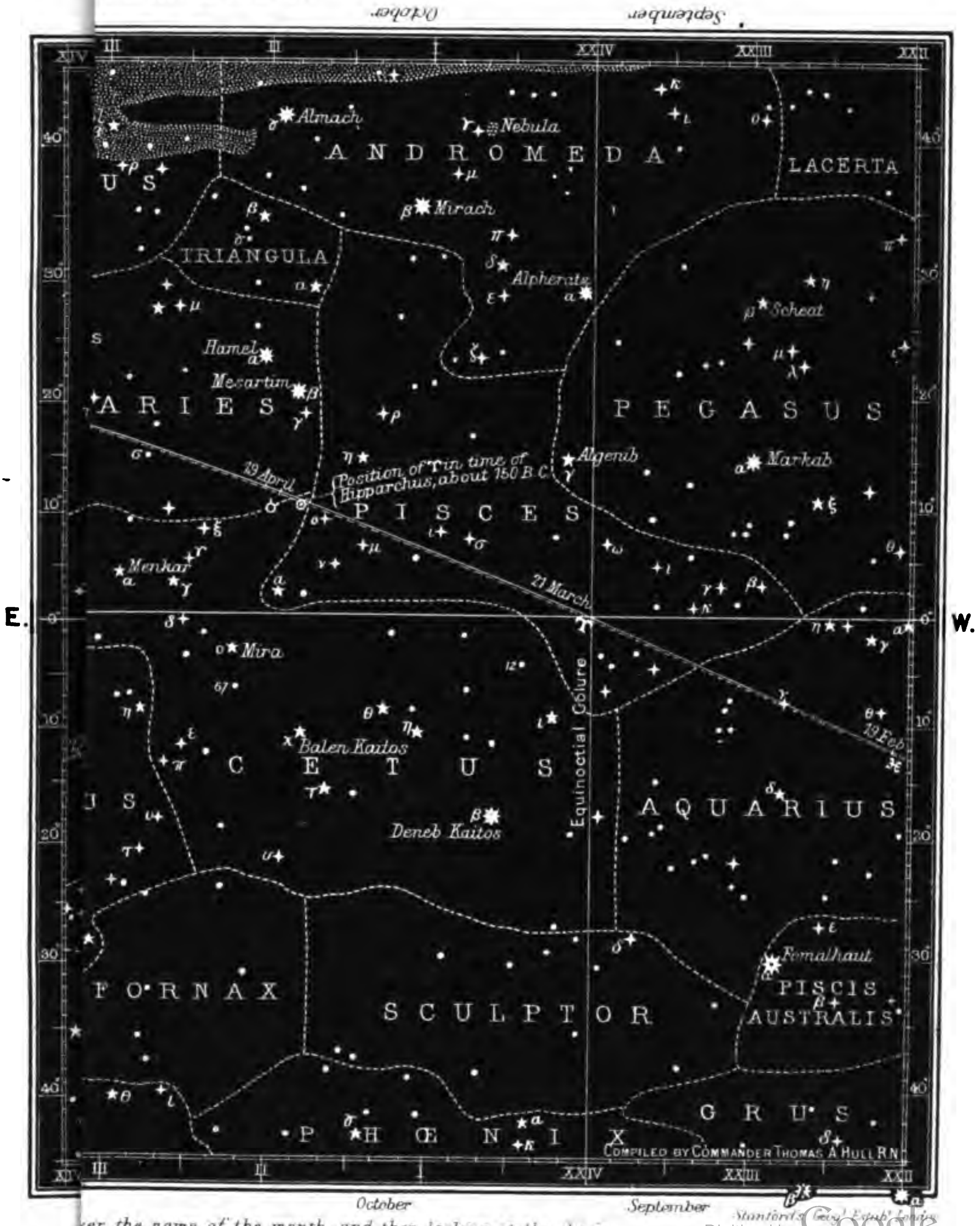

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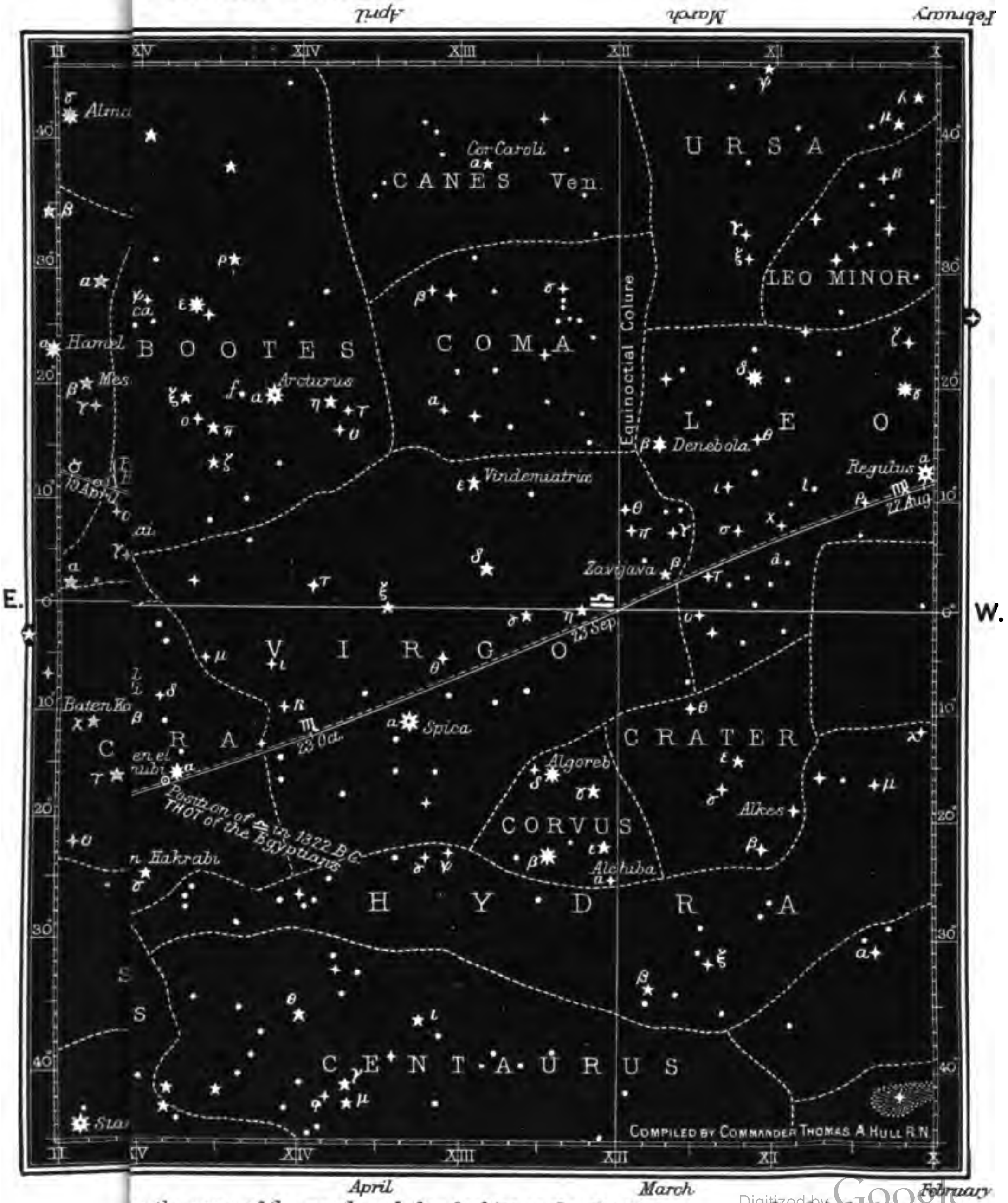


Stanford's Geog¹ Estab¹ London

r the name of the month, and then looking at the sky in
des reverse the map .

Equinoctial Colure passes through these points and the poles of the heavens. It must be remembered that ♈, the first point of Aries, is a most important position in the heavens, being the zero or starting point from which measurements are made. The first points of Cancer and Capricorn, ♋ and ♑, which are most distant from the equator, are called the Solstitial Points. When the sun is at ♋ it is the longest day in the northern hemisphere; when at ♑ it is the longest day in the southern hemisphere. A great circle, known as the Solstitial Colure, also passes through these points, and the poles of the heavens.

On the Terrestrial globe or maps, the position of a place is found by means of latitude and longitude; on the Celestial globe or maps, the position of a heavenly body is found by what is called Declination (Dec.) and Right Ascension (R.A.) These terms correspond to latitude and longitude on the earth; Declination being the distance of a heavenly body directly north or south from the equator, and Right Ascension the distance a heavenly body is eastward, *all round the sphere*, from the Equinoctial Colure or great circle that passes through ♈, the first point of Aries. Right Ascension is not given in degrees, but in hours, minutes, and seconds $^{h.\ m.\ s.}$ and is measured on the equator from 0^h to 24^h.

The position of the heavenly bodies is also known to astronomers by what is termed celestial latitude and longitude; the latitude being the distance a body may be directly north or south of the Ecliptic; and the longitude the distance a heavenly body may be eastward from a great circle passing through the pole of the Ecliptic and the Equinoctial points. Celestial longitude is measured in ° ′ ″ along the Ecliptic, from 0° to 360°.

The Solar System.—As our Solar System, considered to be a circle whose diameter is sixty times the distance of the earth from the sun, must be taken as the centre of the Celestial sphere, a short description of this system is necessary.

The Solar System consists first of a great central body, the Sun, stationary and self-luminous. Round this body revolve at increasing distances, in nearly circular orbits, and at different periods of time, small bodies named Planets. These bodies are not self-luminous, but only visible to us by means of the light from the sun. Some of the planets are solitary, others are accompanied by smaller opaque bodies called satellites which revolve round the planet on whom they attend.

There are four small planets near to the sun, viz., Mercury, Venus, the Earth, and Mars; and four large planets more remote, viz., Jupiter, Saturn, Uranus, and Neptune. Between the small and large planets, *i.e.*, between Mars and Jupiter, are a number of minor planets or Asteroids; 260 of these have been already discovered, and many more are believed to exist.

There are twenty satellites or moons revolving round some of the planets, making a total of 289 bodies in the system. This is exclusive of the singular objects known as Comets, of which over 220 have been noted. Fifteen comets have been recognized on their return to the sun, but most of these bodies move round the sun in orbits so elongated, and in periods so vast, that their return, although approximately calculated, has not been proved by observation.

The planets Venus, Mars, Saturn, and Jupiter, are generally visible to the naked eye. They appear as large bright stars and may easily be known by their appreciably changing their places in regard to the surrounding heavenly bodies or fixed stars. Hence their name "Planet" from the Greek πλανήτης, "a wanderer." The present position of the planets can easily be found in the *Nautical* or *Whitaker's Almanac*, and so placed temporarily on the star maps, by means of the Right Ascension and Declination. As space will not permit of a longer description of the solar system, the following elementary table has been inserted:—

SOME ELEMENTS OF THE SOLAR SYSTEM.

Symbol.	Object.	Distance from Sun in Millions of Miles.	Distance from Sun in Radii of Earth's Orbit.	Diameter in Statute Miles.	Density Earth = 1.	Time of Revolution in Orbit.	Time of Rotation on Axis.	No. of Satellites.	Velocity of motion in Miles per Second.
						Years.	d. h. m.		
⊙	Sun	—	—	865,000	·25	—	25 12 0	0	4
☿	Mercury	35·9	·387	2,992	1·21	·24	0 24 5	0	30
♀	Venus	67·0	·728	7,660	·92	·62	0 23 21	0	22
⊕	Earth	92·7	1·	7,918	1·	1·	0 23 56	1	19
♂	Mars	141·0	1·524	4,200	·95	1·88	0 24 37	2	15
Minor Planets.	Flora	—	—	—	—	3·27	There were in 1887 260 Minor Planets, Flora being the nearest and Maximiliana the farthest from the Sun.		
	Pallas	253·0	—	600	—	4·60			
	Maximiliana	—	—	—	—	6·32			
♃	Jupiter	482·0	5·203	85,000	·24	11·87	0 9 55	4	8
♄	Saturn	884·0	9·539	71,000	·14	29·46	0 10 14	8	6
♅	Uranus	1780·0	19·182	31,700	·24	84·04	Unknown	4	4
♆	Neptune	2780·0	30.037	24,500	·14	164·65	"	1	—
☾	Moon	Distance from Earth 238,000 miles.	—	2,160	·61	d. h. m. 27 7 43	d. h. m. 27 7 43	—	63

Number of the stars.—It may startle some to be told that on the clearest night, under the most favourable circumstances, there are only about 2,700 stars visible to the naked eye in the vault of the heavens. Yet such is the fact, as may be proved from a deck-chair by actual counting. With an opera glass or telescope it will be found that by aid of the greater power of the glass, there are more visible, and the observer will not be surprised to hear that astronomers have already counted some twenty millions. But these approximate numbers are much below the real ones: the Milky Way alone contains, according to Herschel, eighteen millions. The Catalogue of Stars of the British Association for the Advancement of Science, contains the position of 8,377 Fixed Stars. Stars differ in brilliancy, and they are divided by astronomers into classes or magnitudes. Stars of the first six magnitudes are, under favourable circumstances, all visible to the naked eye. Of these, there are a few more than 5,100 in number; but they are never all of them above an observer's horizon at the same time. Of stars of the first magnitude there are nineteen; and to know these by name and position is to know the sign-posts of the heavens. The following table of the stars of the first and second magnitudes, with some of the third, will be found useful when using the star maps:—

List of Stars of the First, Second, and Third Magnitudes, in order of their R.A.:—

FIRST MAGNITUDE.

North of Equator, *Nine.*			South of Equator, *Ten.*		
Astronomical Names.	Proper Names.	Dec. °	Astronomical Names.	Proper Names.	Dec. °
α Tauri	Aldebaran	16	α Eridani	Achernar	58
α Aurigæ	Capella	46	β Orionis	Rigel	8
α Orionis (variable)	Betelgeuse	7	α Argus	Canopus	53
α Canis Minoris	Procyon	6	α Canis Majoris	Sirius	17
β Geminorum	Pollux	28	α Crucis	——	62
α Leonis	Regulus	13	α Virginis	Spica	11
α Bootes	Arcturus	20	β Centauri	——	60
α Lyræ	Vega	39	α Centauri	——	60
α Aquilæ	Altair	9	α Scorpii	Antares	26
			α Piscis Australis	Fomalhaut	30

SECOND AND THIRD MAGNITUDES

North of Equator, *Forty*.				South of Equator, *Forty*.			
Astronomical Names.	Mag.	Proper Names.	Dec.	Astronomical Names.	Mag.	Proper Names.	Dec' °
α Andromedæ	2	Alpheratz	28	α Phœnices	3	——	43
γ Pegasi	3	Algenib	15	β Hydri	3	——	78
α Cassiopeiæ	var.	Schedar	56	β Ceti	2	Deneb Kaitos	19
β Andromedæ	2	Mirach	35	o Ceti	var.	Mira	3
α Ursæ Minoris	2	Polaris	89	δ Orionis	2	Mintaka	0
β Arietis	3	Sheratan	20	α Leporis	3	——	18
α Arietis	2	Hamel	23	α Doradus	3	——	55
α Ceti	3	Menkar	4	ε Orionis	2	Alnilam	1
β Persei	var.	Algol	40	α Columbæ	2	Phact	34
α Persei	2	Mirfak	49	κ Orionis	3	——	10
η Tauri (Pleiades)	3	Alcyone	24	ε Canis Majoris	2	Adara	29
β Tauri	2	Nath	29	δ Canis Majoris	2	——	27
γ Orionis	2	Bellatrix	6	γ Argus	3	——	47
β Aurigæ	2	Menkalinan	45	ι Argus	2	——	59
γ Geminorum	3	Alhena	16	β Argus	2	——	69
α Geminorum	2	Castor	32	α Hydræ	2	Alphard	8
γ Leonis	2	Algeiba	20	η Argus	var.	——	59
α Ursæ Majoris	2	Dubhe	62	ε Corvi	3	——	22
β Ursæ Majoris	3	Merak	57	δ Corvi	2	Algoreb	16
δ Leonis	2	Zosma	21	β Corvi	2	——	23
β Virginis	3	Zavigava	3	γ Virginis	3	——	1
β Leonis	2	Denebola	15	γ Crucis	2	——	57
γ Ursæ Majoris	2	Phecda	54	β Crucis	2	——	59
ε Virginis	3	Vindemiatrix	12	α Libræ	3	Zuben el Genubi	16
α Canum Venaticorum	3	Cor Caroli	39	β Libræ	2	Zuben el Chamali	9
η Ursæ Majoris	2	Benetnasch	50	β Scorpii	2	——	19
α Draconis	3	Thuban	65	α Trianguli Australis	2	——	69
ε Bootes	3	Pulcherrima	28	η Ophiuchi	2	——	16
β Ursæ Minoris	2	Kochab	75	α Aræ	3	——	50
α Coronæ Borealis	2	Alphacca	27	λ Scorpii	2	——	37
α Serpentis	2	Unukalhai	7	θ Scorpii	2	——	43
α Herculis	var.	Ras Algethi	15	ε Sagittarii	2	Kaus Australis	34
β Dragonis	3	Alwaid	52	σ Sagittarii	2	——	27
α Ophiuchi	2	Ras Alkague	13	α Capricorni	3	Secunda Giedi	13
γ Dragonis	2	Rastaban	52	α Pavonis	2	——	57
α Cygni	2	Deneb	45	β Aquarii	3	Sadalsund	6
α Cephei	3	Alderamin	62	α Aquarii	3	Sadalmelek	1
ε Pegasi	2	Enif	9	α Gruis	2	——	47
α Pegasi	2	Markab	15	α Toucanis	3	——	61
β Pegasi	3	Scheat	27	β Gruis	2	——	47

How to know the Stars.—Beginning with the north polar map, the Great and Little Bears will be easily recognised. The North Pole is close to the Pole Star, the last star in the tail of the Little Bear. Two large stars of the conspicuous four in the Great Bear, α and β, known as "the pointers," point to this important star. On the opposite side of the Pole to the tail of the Great Bear, and about the same distance from the Pole, is the constellation of Cassiopeia, in the shape of a bad **W**, familiarly known as the Lady's Chair. If an imaginary line be drawn from the four stars of the Great Bear, though the four stars of the Little Bear, it will lead to Deneb, the bright star in Cygnus, a constellation forming a great cross of five stars, Deneb being the northern star. A line drawn through the northern stars of the quadrilateral in the Great Bear will lead to Capella, the northern bright star in Auriga, a constellation of five stars in the form of a large irregular pentagon. Capella may also be known by three small stars called "the Kids," in the form of a little isosceles triangle lying close to the southward of it. On the opposite side of the Pole to Capella, and about the same distance from it, are a group of four smaller stars known as the Dragon's Head; one diagonal of which will point to Vega, the bright star in Lyra, marked by a parallelogram of small stars lying to the southward of it. Between Cassiopeia and the Dragon's Head are two stars in Cepheus pointing directly towards the Pole, and lying rather nearer to it than "the pointers." Between Capella and Cassiopeia lie the two bright stars Mirfak and Algol, in Perseus, also pointing in the direction of the Pole.

Next taking the map of the "Southern Signs of the Zodiac" in hand, and looking at the heavens it will be seen that if the tail of the Great Bear is continued in the same curve it will lead the eye first to Arcturus, the brightest star in Bootes, and then to Spica, the great star in Virgo. Continuing the line from the Dragon's Head through Vega, will lead to Altair in Aquila, easily recognised as a brilliant star lying close to, and midway between two lesser stars. These three stars, Deneb, Vega, and Altair, form a great triangle in the heavens. Directly south of Cassiopeia, a great square of four stars will be seen, known as the "Square of Pegasus." The two northern stars are named Alpheratz and Scheat, the two southern, Algenib and Markab. From Alpheratz three stars forming a tail similar, but much larger, than that of the Great Bear, trend towards Perseus, the last star being Algol in that constellation. A line drawn through Scheat and Markab to the southward will pass through the first magnitude star, Fomalhaut in Piscis Australis. To the south-west of Spica is the small constellation of Corvus with two stars of the second magnitude. This group is not so much like a crow as it is like a boat's lug sail, the yard of which points to Spica Virginis.

Between Vega and Arcturus, but nearer the latter lies the beautiful little constellation Corona Borealis, a ring of stars with a bright one called Alphacca. A line from the northern pointer Dubhe through Phecda—the diagonally opposite star in Ursa Major—will lead to a star called Cor Caroli. A line from this star through Alphacca will lead to two stars lying close together, α Herculis and α Ophiuchi. Eastward from Spica and on a line from the last star in the tail of the Great Bear through Arcturus are the two stars of Libra.

The southern of these stars, Zuben el Genubi, may have been the foundation star of the Egyptian calendar, supposed to have been initiated about 1322 B.C., as at that time the first point of Libra, ♎ or "Thot" of the Egyptian Zodiac, was very near to α Libræ.

A line through Spica and Zuben el Genubi will lead towards Antares, the great red star of Scorpio. This constellation passing the meridian at midnight in the end of May, has some resemblance to the creature whose name it bears, the curved tail and two stars forming the sting being a prominent feature in the sky.

A line from Zuben el Genubi through Antares will lead to ε Sagittarii, Kaus Australis, with another bright star to north-east. A line drawn southward through Alpheratz and Markab, the diagonal of the square of Pegasus, will lead to α and β Aquarii, Sadalmelek, and Sadalsund.

Turning to the map, "Northern signs of the Zodiac," near the centre will be seen the great constellation of the northern winter sky, the splendid group of Orion. A line from the Pole star through Capella will lead to this cluster. Within a trapezium of four large stars, two of them—Betelgeuse in the north and Rigel in the south—being of the first magnitude, lies Orion's belt formed by three stars. Northward, the line of the belt points to the beautiful clusters of the Hyades and Pleiades in Taurus, in the former of which lies the great red Aldebaran. Southward, Orion's belt leads to Sirius, the Dog star, the most brilliant of the heavenly bodies. A line from Rigel through the middle of the belt will guide the eye to Castor and Pollux in Gemini; while directly south from the twins and about midway between them and Sirius is Procyon in Canis Minor.

About half way on a line drawn from the Pleiades to Algenib, the south-eastern star of the square of Pegasus, lies Hamel, the principal star in Aries. In the days of Hipparchus, about 150 B.C., the first point of Aries, ♈ was just south of this star. To the southward, forming an equilateral triangle with Hamel and the Pleiades, will be seen Menkar in Cetus.

A line from the centre of Orion's belt through Procyon points first to Regulus and then to Denebola, the bright stars in Leo. This constellation may be known by its stars taking the form of a sickle, jewelled in the handle by Regulus. A line from the eastern star of this sickle through Regulus points to Alphard in Hydra. If from the small cluster forming the head of Orion a line be drawn, passing through the centre of the belt, it will pass near Phact, a star of the second magnitude in Columba.

Turning to the map of the "South Pole," the most conspicuous constellations are Crux, Centaurus, and Argo. Crux, the Southern Cross, is a small but brilliant group, the distance between the stars forming the head and foot, being little more than that between the pointers to the northern Pole star. These two stars point to the South Pole, and also to Achernar, the bright star in Eridanus. α Crucis, the foot of the cross, lies nearest to the pole, and when passing the meridian the cross is nearly erect. To the left of the cross when on the meridian, and pointing towards it, are α and β Centauri, both of the first magnitude; while on the other side of the cross, and at right angles to a line drawn from the pole to the cross, is Canopus, the brightest star in Argo Navis.

The South Pole lies nearly midway and on a line drawn from the cross to Achernar; it has no star of any brilliancy in its vicinity, although within three-quarters of a degree of the pole lies σ Octantis, a small star of the sixth magnitude. In this part of the heavens will be seen the singular nebulous spots known as the Magellanic clouds the larger between the pole and Canopus; the smaller between the pole and Achernar. A bright star in Hydrus lies between these clouds. Directly under the pole and in line with the cross is the principal star in Phœnix. A line from Canopus drawn through the large Magellanic cloud leads to α Pavonis. α Gruis lies between that star and Fomalhaut, while α Trianguli Australis will be found about midway between α Pavonis and the Southern Cross.

About midnight at the end of March and beginning of April, after passing the Dædalus light in the Red Sea, the Southern Cross, with α and β Centauri will be visible; the Great Bear will also be in sight to the northward. In the east at this time of the year will be seen the Dragon's Head, Vega, Antares, the two stars of Libra, and Alphacca. Spica, Denebola, and the bright star in Corvus will be near the meridian; while in the west will be seen Regulus, Procyon, Castor and Pollux, and Capella, In crossing the Indian Ocean, on each successive night the cross will be found higher and the Bear lower, the last star of the tail being just visible when off Cape Leeuwin.

This description of the constellations with the principal stars will enable the passenger, assisted by the maps, soon

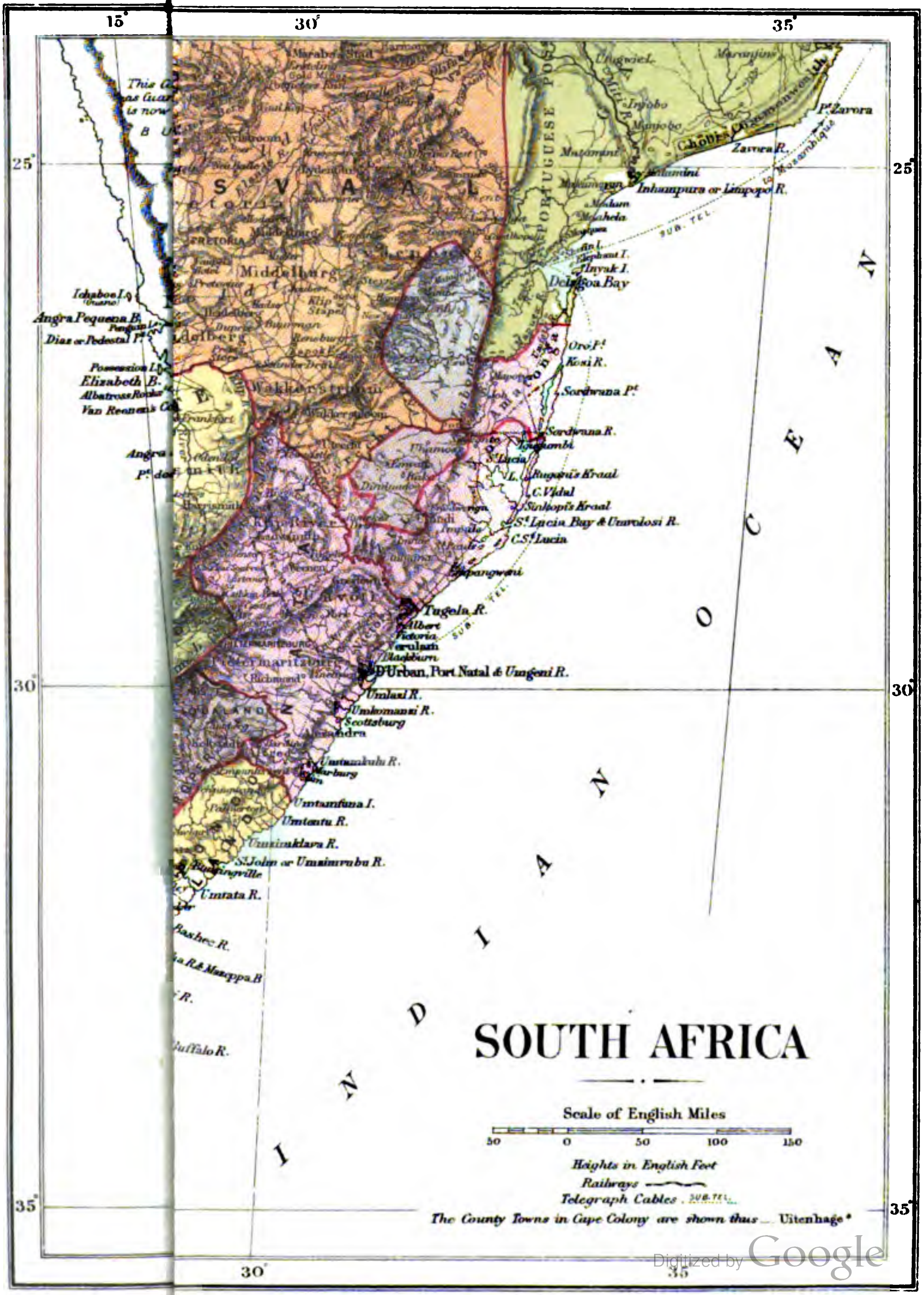
> "To know night's goodly company of stars,
> And those bright lords that deck the firmament."

The Precession of the Equinoxes.—It is here thought necessary to call attention to the important astronomical phenomenon known as the Precession of the Equinoxes. The position of the North Pole of the heavens is indicated by a bright star known as Polaris, or the Pole Star, which lies in its immediate vicinity. But it must be remembered that this Pole is not fixed, but is a point moving slowly among the fixed stars. The Pole is now approaching Polaris, will be nearest to it in 2120 A.D., after which it will recede from it, and for 250 centuries, Polaris, or as the Arabs named it, Kaukab al Shemal, will cease to be the Pole Star.

This movement of the Pole is the result of the attractive action of the sun, moon and planets on the protuberant matter about the earth's equator, causing the axis of the earth to change its direction and assume a conical motion, like that of a peg-top when it loses its speed. "This toy," says Sir John Herschell, "illustrates the whole phenomenon" of the Precession of the Equinoxes. The Pole has therefore a slow motion, completing a small circle round the Pole of the Ecliptic in 25,867 years; and may be considered as the Second hand of Time on the dial of the Great Clock of Eternity. This small circle has been drawn on the Polar maps.

Hence, the earth is always changing the Pole Star. After 2120, A.D., the Pole will, receding from Polaris, pass through Cepheus and Cygnus to Lyra, when in 14,120 A.D., Vega will be the brightest star in the vicinity of the Pole. Then passing through Hercules and Draco, the Pole will return to Ursa Minor. In the days of the building of the Pyramids, α Draconis, Thuban, was the Pole Star, γ and δ Ursa Majoris being the Pointers. Similarly in the southern hemisphere, Canopus will be the bright star in the vicinity of the South Pole, ν Argus being the Pole Star about the same time as Vega is nearest to the North Pole.

This conical motion of the earth's axis changing the position of the Poles in the heavens naturally causes a similar motion of the equinoctial points. As the Pole moves slowly round the Pole of the Ecliptic, so will these points move along the Ecliptic at the rate of one degree in about seventy-two years, the average duration of man's life. This fact will explain to the observant passenger why, on the star map the symbols marking the "first points," or beginning of the Signs of the Zodiac, are removed some 30° from the constellation that bears the name of the same sign. For instance, between ♈ and ♉, the symbols representing the "first points" of Aries and Taurus, lie the stars forming the constellation of Pisces, between ♉ and ♊, or Taurus and Gemini, the stars of Aries are found, and so on. The cause for this is, when the "first points" of the Signs of the Zodiac were adopted by Hipparchus, about 150 B.C., that of the Vernal Equinox,


SOUTH AFRICA
Scale of English Miles
50
0
50
100
150
Heights in English Feet
Railways
Telegraph Cables SUB. TEL.
The County Towns in Cape Colony are shown thus ... Uitenhage
15°
30°
35°
25°
30°
35°
I N D I A N
O C E A N
PORTUGUESE POS.
PRETORIA
Middelburg
Heidelberg
Wakkerstroom
Pietermaritzburg
Richmond
Harrismith
Ichaboe I.
Angra Pequena B.
Dias or Pedestal Pt.
Possession I.
Elizabeth B.
Albatross Rocks
Van Reenen's
Umzimkulu R.
Maramba
Inhambane
Chobes
Pt. Zarora
Zavora R.
Inhampura or Limpopo R.
Delagoa Bay
Inyak I.
Elephant I.
Oro Pt.
Kosi R.
Sordwana Pt.
Sordwana R.
Rugusi's Kraal
C. Vidal
Sinkopi's Kraal
St. Lucia Bay & Umvolosi R.
C. St. Lucia
Tugela R.
Albert
Victoria
Verulam
Blackburn
D'Urban, Port Natal & Umgeni R.
Umlazi R.
Umkomanzi R.
Scottsburg
Alexandra
Umtamkulu R.
Marburg
Umtamfuna I.
Umtentu R.
Umzimklava R.
St. John or Umzimvubu R.
Umtata R.
Bashee R.
Buffalo R.
to Mozambique

♈ Aries, stood under Hamel, the bright star of that constellation, when on the meridian. Similarly, at the establishment of the Egyptian Calendar in 1322, B.C., ♎ the first point of Libra, "Thot" of the Egyptians, stood almost on Zuben el Genubi, α Libræ; Zuben el Shemali, β Libræ, when on the meridian standing directly over it. At present these stars are 43° or nearly a sign and a half from α Libræ.

From the above it will be seen that although the Declination, Right Ascension, and celestial longitudes of the fixed stars are slowly but continuously changing, there is little or no change in celestial latitudes; the Ecliptic and its poles holding an invariable position with respect to the fixed stars.

Scintillation.— In the temperate regions all stars scintillate; but this luminous movement varies with the degree of purity of the sky, the elevation of the stars, and the temperature of the night. This twinkling or scintillation, Arago explained, is caused by the "difference of velocity of the various coloured rays penetrating the unequally warm, unequally dense, unequally humid layers of atmosphere surrounding this earth." These layers are fewer overhead; in the tropics they are usually more equable and homogeneous than in the temperate zones, and consequently scintillation is rarely observed in stars whose altitude exceeds fifteen degrees. "This circumstance," says Humboldt, "gives to the celestial vault of the tropics a particular calm and soft character." Planets scintillate but little, Saturn and Jupiter rarely, but the movement is more perceptible in Mars, Mercury, and Venus.

Distance of the Stars.—There are two stars in Centaurus that point to the Southern Cross. The one of these farthest from the Cross is generally regarded as the fixed star that is nearest to the earth; but its distance is 211,330 times that of the sun from the earth. Sirius and Vega are distant over 1,300,000 radii of the earth's orbit; while Capella's distance is said to be as much as 4,484,000 radii. Such distances are almost inconceivable. Supposing one could journey to the sun in one day, it would take about 578 years to reach this nearest star—α Centauri. The diameter of the earth's orbit, over 185,000,000 miles, becomes, with regard to a vast majority of the fixed stars, a point! Let us suppose this orbit of the earth to be illuminated, to become a planet over 185,000,000 of miles in diameter. Let a spectator on α Centauri, the *nearest* fixed star to the earth, look for this planet. What would he find? A star invisible to the naked eye, and only to be seen with the help of a telescope. And from such a point the astronomer has to measure the Universe. It is no wonder that at such distances even the most powerful telescopes are unable to show any appreciable disc in stars.

Movement.—Fixed stars, in spite of their apparent fixity, do however move. Our own sun, a fixed star to others, travelling with his system of planets in some enormous orbit, is at present moving towards a point in the constellation of Hercules, at a supposed rate of 4 miles per second. The centre round which the sun's orbit lies is supposed to be near the Pleiades. The rate of motion of Arcturus, Capella, Sirius, Vega, and α Centauri has also been determined. And all other star systems are moving "in their courses," "circling obedient round mightier orbs," but through their enormous distance their motion is to us very small. It has taken the nearest star to us, α Centauri, 500 years to travel over a portion of the heavens as long as the apparent diameter of the moon.

Variable Stars.—As with lighthouses on the earth, we have fixed or permanent and revolving lights, so in the heavens some stars shine with a permanent and persistent light, while of others the brilliancy waxes and wanes, and sometimes they disappear altogether.

In the Whale is the star Mira, *o* Ceti, which each year is practically invisible for five months. After this for three months its brilliancy increases till it approaches the second magnitude, and in 1799, it was as bright as its neighbour Aldebaran. It remains at its greatest brilliancy about a fortnight, then wanes and in three months more is again invisible to the naked eye.

In Perseus, Algol, a star of the second magnitude, for two days, thirteen hours, and twenty minutes, suddenly decreases in brilliancy, and in three hours and thirty minutes descends to the fourth magnitude. Remaining thus for about twenty minutes, it begins to increase, and in three hours and thirty minutes regains the second magnitude. All these changes are thus effected in less than three days.

The four stars in the body of the Great Bear were in the seventeenth century of similar magnitude. One, has since then fallen off considerably in brilliancy. In Orion, the star Betelgeuse alters in magnitude during a regular period of 200 days.

But perhaps the most remarkable of these stars is one that appears periodically in Cassiopeia. In November, 1572, a large star suddenly appeared in Cassiopeia, and soon rivalled Sirius in brilliancy. In March, 1573, it began to lose lustre, and in March, 1574, it had completely disappeared. It was at the first white in colour, and then yellow, and then red. Similar apparitions, in approximately the same position, were recorded in 945, and again in 1264. The year 1885 was a middle date for a return of the maximum brilliancy of this star. As it's re-appearance has not yet been observed, the passenger will have an additional incentive to watch the constellation of Cassiopeia.

One of the most curious objects in the southern skies is η Argus, a star on the opposite side of the Cross to α and β Centauri, and nearly the same distance from it. This star in about 1670 was only of the fourth magnitude, in 1750 it attained the second; from this it decreased until 1826, after which date it passed through astonishing phases, attaining in 1838 the brilliancy of α Centauri, and in 1843 nearly rivaling Sirius. It is now barely visible to the naked eye.

Several such recurring or variable stars have appeared most suddenly and remained, while others have completely "gone out," after shining from time immemorial; what the causes may be, is undetermined: some suppose variation in the stars themselves; others, the intervention of planets which may revolve round them; or of nebulous masses travelling through space. The new theory that the sun in his journey through space, absorbs as fuel gaseous matter, and dust, of which space is full, may allow the supposition that such matter in suspense may, in the vast distances the stars' rays have to penetrate in order to reach us, be sufficient to intercept certain light rays, and partially deflect others.

Coloured Stars.—Closely connected with these phenomena is the fact, that stars vary in colour, not only as compared with one another, but in themselves from time to time. Aldebaran and Betelgeuse, near together in Orion and Taurus, are distinctly red, as may be seen by comparing them with their white neighbours, Sirius and Regulus in Leo. The Greeks recognised only red and white stars, but modern astronomy recognises a large variety of tints; Aldebaran, Betelgeuse, Arcturus, and Antares are decidedly red. Capella, the Pole Star, and Procyon are yellow, Castor is distinctly green, and Vega is blue. In long periods of time, stars change their colour; Sirius, now a brilliant white, was reported red by the ancients; and stars in the Lion and Dolphin that were at the beginning of this century white, are now red. Astronomers are not yet confident as to the causes of these colours and changes. Some have held them due to the relative speeds with which the stars approach or recede from earth. Others hold that the colour represents the process of formation or decomposition of the star itself; others believe it to be some not yet understood attribute of the spectrum. It may be due to the gaseous vapours and dusts that, as we have before hinted, fill space and certainly affect all rays of light permeating space.

Double and Binary Stars.—Over six thousand of the stars we know when observed through the telescope, show that they are made up of two or more stars. In the middle of Orion there is a star, θ, which when seen through a powerful telescope is found to form a group of no less than seven stars; while ϵ Lyræ close to Vega, consists of two couples or two pairs of stars, appearing to the eye as one star. Of the 6,000 stars, 650 are called Binary—*i.e.*, two suns turning round a common centre of gravity. In the double star no movement of revolution can be detected; the smaller star, has, therefore, been called a "companion" to the larger.

The Pole Star, Vega, Altair, and Aldebaran have companions. In the Binary stars a decided period of revolution has been discovered. Herschell gives a table of twenty-one Binary stars, whose periods of revolution vary from 31 to 737 years: α Centauri is a Binary star, and in 1862, Sirius was found to have a secondary sun revolving round it. Many of these double stars are coloured, all possible shades being met with.

Clusters of stars are seen in many places in the heavens; sometimes these are mere effects of perspective, but in other cases stars appear to congregate in such close vicinity that it is impossible not to recognize them as stellar groups—real systems of suns. Of the clusters remarkable for richness and brilliancy of the individual stars that in Perseus is a striking example, and one of the most glorious objects in the heavens; it lies between the bright stars of Cassiopeia and Perseus, a dull spot to the unaided eye, but even a small telescope will discover its marvellous beauties. The cluster in Hercules, visible to the eye as a luminous spot, is estimated to contain 1,000 to 2,000 stars. The star κ Crucis is surrounded with small stars, and in the area of one 48th part of a degree are about 110 stars, eight of the more conspicuous of which are coloured with various shades of red, green, and blue, so as to give the whole the appearance of a casket of various coloured precious stones.

The Milky Way may be considered as a star cluster, consisting of eighteen million visibly separate stars. It follows nearly the circumference of a great circle in the heavens, passing from Perseus through Cassiopeia to Cygnus, thence through Aquila and the tail of Scorpio by α and β Centauri, to Crux and Argo; returning to the north by Canis Major, passing between Procyon and Betelgeuse, and rejoining Perseus through Auriga. From Cygnus to Centaurus the Milk Way is split into two parts forming a kind of gap through which the dark space beyond is seen. In the midst of the bright mass surrounding Crux and α and β Centauri is a singular dark pear-shaped vacancy, called by the early southern navigators the *Coal-sack*. In this dark space there is only one small star visible to the naked eye: though it is far from devoid of telescopic stars, so that its striking blackness is simply due to the effect of contrast with the brilliant ground surrounding it. Sir W. Herschell compared the Milky Way to a great mill-stone in shape, the rim split open into two for nearly one-half of its circumference. The solar system is situated nearly midway between the two surfaces, and about where the split is. Looking towards the top or bottom of the mill-stone from the earth comparatively few stars are seen, but looking through the rim of the mill-stone we see the dense numbers of stars forming the Milky Way Imagination may lead us to regard our own solar system as but one of the twenty million that composed this mill-stone of solar systems; and it may lead us further to marvel how many of these "mill-stones" there may be occupying space. Our powers of observation at present only enable us to see the limits of our own mill-stone, and the farthest star in this is so distant that its rays of light take not less than 10,000 years to reach the earth.*

Nebulæ, formerly supposed to be composed of an aggregation of innumerable stars are now known to be glowing masses of gas, not moving like comets, but retaining their position like the fixed stars. The celestial concave is strewn with nebulæ of various sizes, brilliancy and character. Space will admit of only a brief reference to a few of these most interesting objects. One of the most remarkable is that named θ Orionis, the multiple star already described: when seen with the telescope it occupies a space in the sky about the size of the moon. Another great nebula is found in Andromeda a little east of a line drawn from Alpheratz and Algenib of the square of Pegasus. In August, 1885, after an increase in the brilliancy of this nebula, a new star *Nova Andromedæ* appeared in it.

In Lyra not far from Vega a nebulous ring of oval form surrounds a darker space, appearing like a ring of steam which occasionally escapes from a locomotive.

Near the south Pole are the two great Nebulæ known as the Magellanic clouds: these half stellar, half nebulous systems, easily seen with the naked eye on a clear moonless night, are distinguished from other nebulæ by their great dimensions and their physical structure. First there are a great number of single stars of the 5th to the 11th magnitude; then star clusters, some irregular in shape, some spherical, some oval; lastly, nebulæ, some separate, others grouped together. The Magellanic clouds are distinguished from all other known nebulæ and seem like miniatures of the entire heavens.

Shooting Stars belong to systems of bodies travelling in orbits of all degrees of eccentricities around the sun. The earth encounters more than a hundred such systems in the course of her annual revolution. The two most remarkable of these systems are met with on the 10th August and 11th November. These meteors are emitted from the same part of the heavens, hence called the *radiant* point; those of August come from γ Persei, those of November from μ Leonis. The November meteors revolve round the sun in about thirty-three-and-a-half years in an orbit similar in eccentricity to that of the comets. The shooting stars gleam with an incandescence due to the friction they encounter on entering our denser atmosphere, which frequently ends in consuming them altogether.

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* The only mode we have of conceiving such intervals is by the time it would require for light to traverse them. Light travels at the rate of 185,000 miles per second, traversing the distance between the sun and the earth in $8^{m.}\ 17^{s.}$: and between the earth and α Centauri, the nearest fixed star, in three years and seven months.

Then there are the comets, combinations of gaseous matter, and kernels of dust, which Mr. Huggins, by means of his successful spectroscopic observations, has shown to shine both by the reflected light of the sun and by their own innate incandescence; and which seem, in appropriate relation to this double character of their light, to travel into and also out of the limits of our solar system. Mr. Huggins also made the discovery, by the same means, that nebulæ are not suns, nor incandescent matter, but merely glowing masses of gas. It is this same spectrum analysis which enables astronomers to see for certain that the various heavenly bodies contain metals and elements similar to those which constitute our own earth. Thus, in the last few years, has human intelligence, by working among the metals close to hand, become gifted with the power of recognizing the materials of which heavenly bodies are composed that are thousands and hundreds of thousands of million miles distant.

The Zodiacal Light is a phenomenon of much interest often witnessed at sea under favourable circumstances, according to the ship's position and time of the year.

In European evenings at the time of the vernal equinox when the twilight is of short duration, a faint but beautiful light in the form of a lenticular cone, its base towards the sea, may be seen extending from that part of the horizon where the sun has set, some distance up into the heavens in the direction of the Zodiac, hence the name. It is also seen in Europe before sunrise in the mornings of the autumnal equinox. In the tropical zones the Zodiacal light increases in intensity and altitude and can be seen throughout the year. Humboldt describes it when seen from the table-lands of Quito, and from the Mexican lakes as at times surpassing in brilliancy the most striking parts of the Milky Way.

The Zodiacal Light is generally supposed to be a flattened nebulous ring surrounding the sun in the plane of the ecliptic, extending as far as, or even beyond, the orbit of the earth. There is much controversy as to its origin or cause. One hypothesis is that it is formed of myriads of solid particles analogous to the aërolites, possessing a general movement, but travelling separately around the focus of the solar system. The light of the ring would be thus produced by the accumulation of this multitude of brilliant points reflecting towards us the light borrowed by each of them from the sun.

NOTE ON THE ARABIC NAMES OF STARS.

It is well known that a good many of the names by which the more remarkable of the fixed stars are called are of Arabic origin. They are nearly all much corrupted, and are often very difficult, if not impossible, to interpret. The original meaning is sometimes not to be found; and a further problem is often offered by the great antiquity of the language and the archaic character of the words.

The ordinary modern word for "star" is *najm*, pronounced in Egypt, *nagmeh*, but the old astronomical term is *kaukab*, or *kokab*.

Rigel is from *rigl*, "a foot," as it is the foot of Orion.

Betelgeuse is in Arabic *Beyt el Agoos*, "the house of the old man." The word *Agoos* in this sense is archaic, and seldom used. Flammarion would make it mean "the shoulder of the giant" (Orion), but the words with which he fortifies this opinion are unintelligible to the ordinary student.

Achernar (α Eridani) is corrupted from *Achir al nahr*, the "end of the river," this constellation, Eridanus, being in Arabic *Al nahr*, "the river."

Aldebaran (α Tauri) is an archaic word said to signify the "bull's eye"; but Flammarion derives it from "*al-dabaran*, qui signifie la suivante, parce que cette étoile suit les Pleiades." *Al dabir* means "a follower," and *Al dabirain* would mean "the two followers." Aldebaran has a small companion of the eleventh magnitude, and wholly beyond the vision of the naked eye.

Altair (α Aquilæ) is, of course, *al tair*, "the bird,": he same word which enters into the composition of the name Gibraltar, *Gebel-al-Tair*.

Fomalhaut (α Piscis Australis) is the first magnitude star in the southern constellation of the Fish. The name is plainly a corruption of *Fom al hût*, "the mouth of the fish."

Algol (β Persei) is the star which blazes out from the fourth magnitude to the second in less than three days; and the name, which should be written *Al hol*—the *h* being strong, almost guttural—signifies "the horrible," and is the same used by the Arabs in *Abu'l Hol*, the "Father of Horror," the name they apply to the Sphinx.

The second and third magnitude stars which compose the Great Bear, or Charles's Wain, or the Plough, are all called by Arabic names. Just as there are several names for the constellation in English, so in Arabic it is sometimes called the Bear and sometimes it is supposed to represent a funeral procession. *Dubhe* (α Ursæ Majoris) is *Dubb* or *Dibb*, a "bear." *Merak* is the second star (β), and the name signifies "the loin." The third star is (γ) *Phegda*, corrupted from *fagha*, the "back"; and the fourth (δ) is *Megrez*, from *Magraz*, the "root" (of the tail). The fifth star (ε) is *Alioth*, a name so corrupted as to be now unintelligible, unless it answers to the "jot" of Scripture; but various guesses have been made (see Flammarion, *Les Etoiles*, p. 95). The sixth star is sometimes, like the second, called *Merak*, and more often *Mizar*, the "veil," said by some to mean "a criterion," or "a test," because only good sight can detect its companion, *Alcòr*, *Al qur*, "the bird," sometimes also named *Saidak*, said to mean the "confidant." The last of all (η) bears a dual name, *Benet nasch*, and reminds us of the older imagery which made the "wain" a "hearse," and the "tail" a row of mourners. *Benat nas*, or *Benat al na'ash*, was the name formerly given to the women hired to make loud lamentation, "the daughters of crying," at a funeral, and the full name of the star is "Al kaid al benat al na'ash," the "chief of the mourners."

The following names are seldom used:—"Deneb," from *Danab*, a tail, is the principal star in the Swan, *a* Cygni). *Borg al hamal*, "the Tower of the Ram," is the star so often mentioned in works on astronomy as "the first point of Aries" from which the zodiacal circle is reckoned. The first star of the Dragon (*a* Draconis) is Thuban, the Arabic *Shuban*, a serpent. In Hydra is *Alphard* (*a*), from the Arabic *Al Farad*, the Solitary. The Pole Star itself (*a* Ursæ Minoris) is often called in European books *Kokab* or *Kaukab*, which means simply "a star;" but its full Arabic name is *Kaukab al shemal*, "star of the north." *Zuben* signifies a station, or fixed point. *Zuben al Genubi* and *Zuben al Shemali* signify the southern and northern stations respectively. *Alpheratz* may be corrupted from *Al farras*, the lion. *Sad-al-Melek* seems to mean "the King's mountain." *Sad-al-Sund*, "the mountain of good omen." *Markab* is a ship. *Al Genib*, properly *Al Genoob*, the south; and *Mirfak* an elbow.

There are in all about a hundred of these names, but the above-mentioned are those that occur in common use.

CHAPTER XV.

SEAMANSHIP, NAVIGATION, WEATHER.

SAILS. — ROPES. — KNOTS. — STEERING. — LATITUDE. — LONGITUDE. — CHARTS. — THE COMPASS.—THE LOG.—CHRONOMETERS.—THE LEAD.—WEATHER AT SEA.—THE BEAUFORT NOTATION.—CLOUDS.—SQUALLS.—THE BAROMETER.—THE THERMOMETER.—THE HYGROMETER.—ISOBARIC CHARTS.—THE AIR.—WINDS.—TROPICAL CYCLONES.—WINDS AND WEATHER BETWEEN ENGLAND AND AUSTRALIA.—UNIVERSAL TIME.

THERE is no part of the voyage from England in which we are more dependent on modern science than in crossing a pathless ocean, and with its aid we know that on a certain day, at a certain hour, we shall see the first headland of Australia. How this wonderful result is brought about we may learn from a careful study of the present chapter, in which Commander Hull affords us all the information that can be pressed into so small a space. And, first, as regards Seamanship:

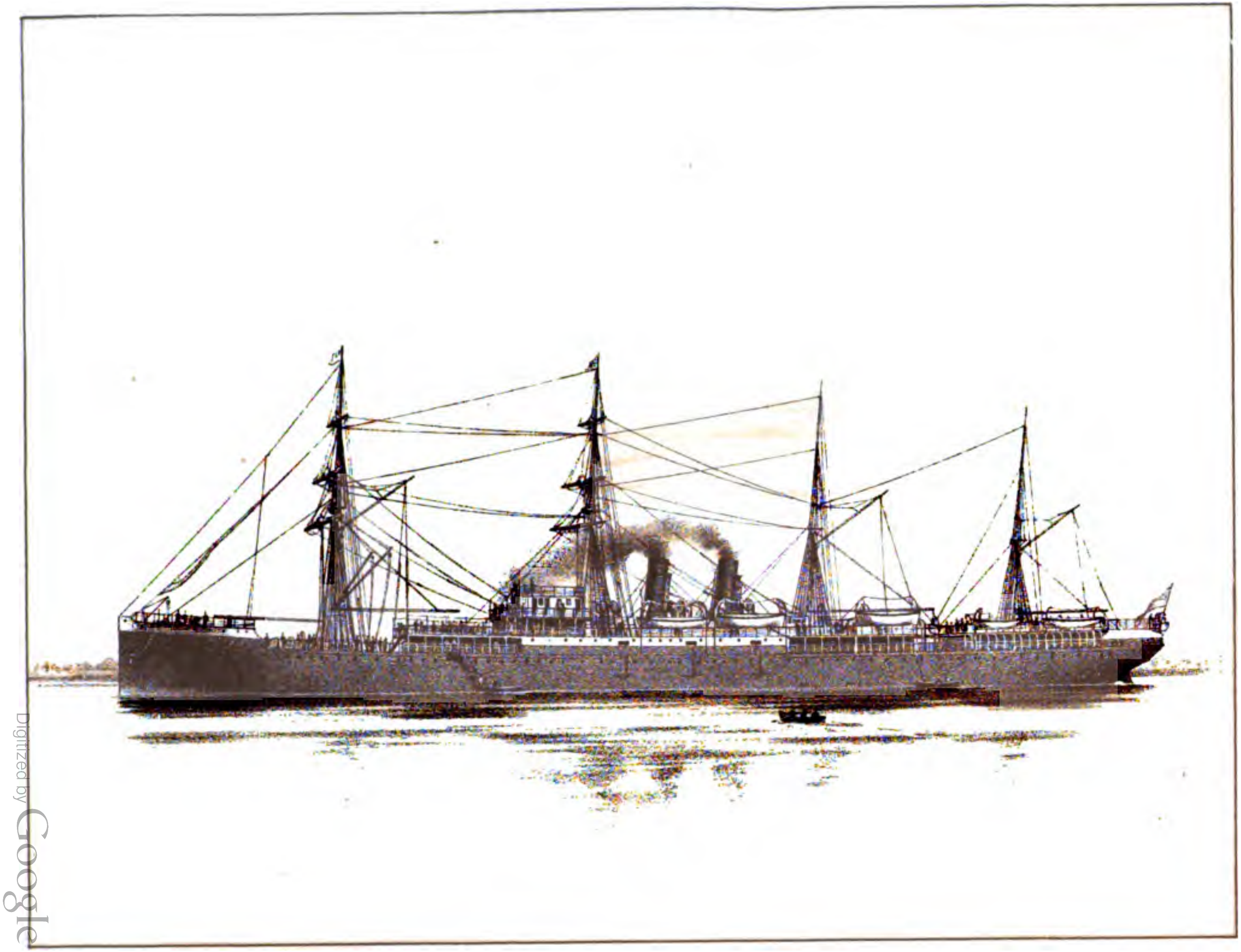
The average landsman regards as convertible the two terms, Navigation and Seamanship, and yet there is all the difference in the world between their significations. Navigation tells us where we are, and which direction to go to get to somewhere else. It is the scientific art by which the vessel's past course is known, present position determined, and future course shaped by the principles of geometry and astronomy upon the surface of the earth, with the assistance of the chart. Seamanship is the art of first preparing the ship and then conducting her in the direction shown by navigation, by the proper management of rudder, engines, and sails; or what is well termed "handling" ship and boats under all circumstances which may arise.

The term "aft" means towards the stern; "forward," towards the bow; and port and starboard side mean respectively the left and the right hand sides of the ship looking forward. The weather side is that side of the ship that is towards the existing wind, the lee side being naturally the other side of the ship; *e.g.*, if a vessel has the wind on the port side, that side will be the weather, and the starboard will be the lee side. If the wind is strong, the "weather" is necessarily the high, and the "lee" the low side of the ship. Poops, or raised quarter-decks aft, have disappeared altogether in ocean passenger steamers; and the topgallant forecastle, which in the old days balanced in the bows the poop in the stern, has gone with it. The officers pace the navigation bridge now instead of the quarter-deck as of old. *On deck* and *below* become the substitutes of upstairs and down stairs; and the light is admitted below by skylights, ports, and scuttles, the two last being situated in the ship's sides.

The masts, yards and rigging stretch away skywards, ready to spread sail should the wind be favourable or the engine need a little assistance. The uninitiated are puzzled by the network they see above them of ropes and spars, and yet there is a strange simplicity reigning aloft, and it is no long lesson to learn the use and name of each rope. There is the "standing rigging," *i.e.*, the *shrouds* and *stays*, which are the fixed supports of the masts, and there is the "running rigging," by which sails are hoisted and lowered, and trimmed. All this "top-hamper" of rigging is a direct drawback when steaming against the wind; but public opinion is not yet prepared for the mastless steamers for which engineers already contend.

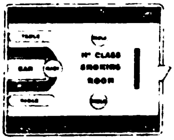
Sailing is an art that will long be necessary at sea. It depends on combining two natural forces. The ship floating in the water has above her hull planes of canvass stretched so that the wind presses on them. Now, if the keel from stern to bow is in the same line as the direction of the wind, and the plane of the sails be placed at right angles to the line of the keel, it is obvious the ship will be driven through the water at a less speed than the wind blows, because of the resistance of the water. But this is not the fastest sailing. Suppose the wind to blow at right angles to the line of keel, and the plane of the sails be placed obliquely to the line of the keel, and on the lee side of the ship; then the wind pressing the vessel's side against the resisting water the lateral resistance greatly exceeds the direct resistance; between these forces the long wedge-shaped hull of the vessel is driven in the line of least resistance, *i.e.*, in the line of the keel, at a great speed. It is thus possible for a vessel to sail faster than the wind travels. A steamer, with sail set, steaming nine knots an hour before a wind which moves at the rate of ten miles an hour will experience very little wind, but if the wind comes on her side, the breeze will have a more sensible effect. The ship will then go, perhaps, eleven or twelve knots an hour, though the wind is still travelling only at a rate of ten knots.

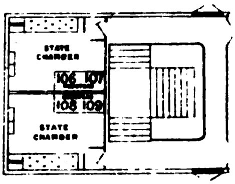
If the vessel is travelling in the same direction as the wind, she is said to be "running." But when the wind blows on her side, she is said to be "reaching."

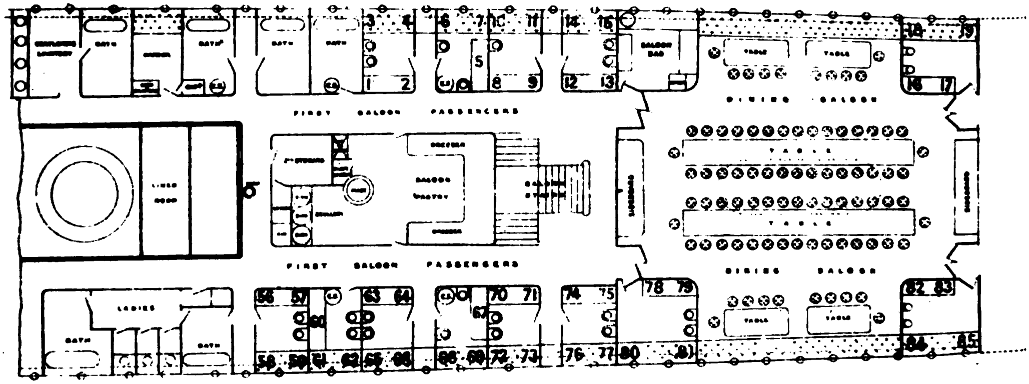


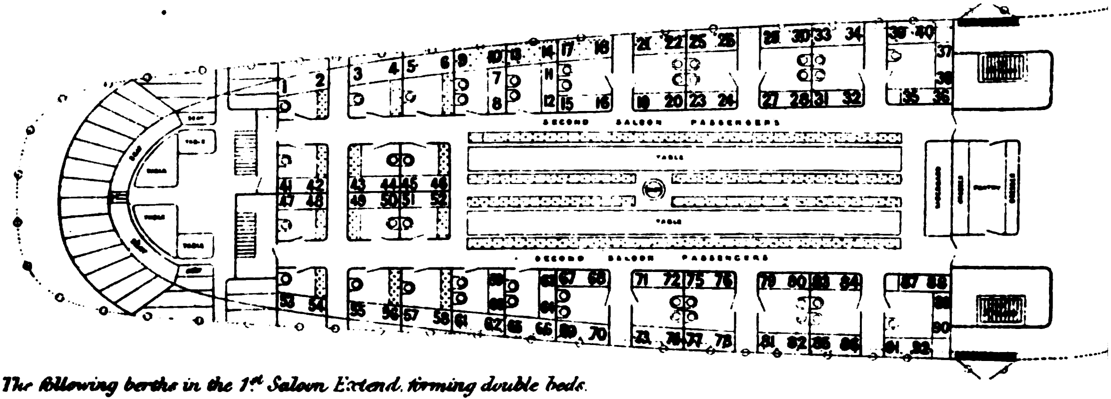
S. S. "ORIENT."

S. S.



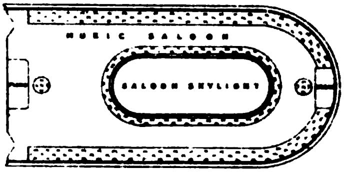


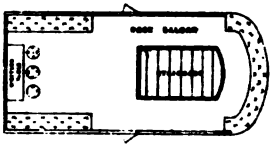


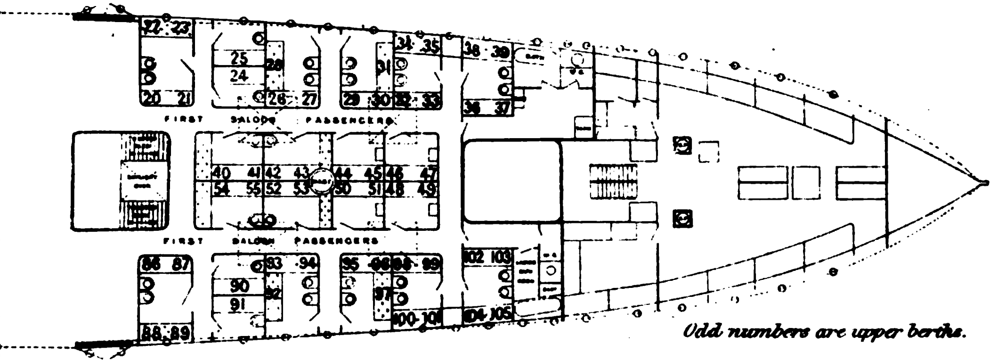


The following berths in the 1st Saloon Extend, forming double beds.
Nos 2. 8. 12.-20, 36, 56, 64, 70, 74, 86, 102.

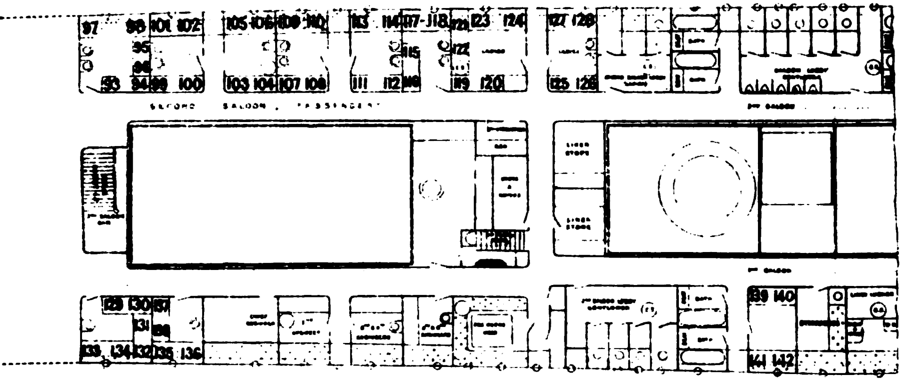
"ORIENT."







Odd numbers are upper berths.



Odd numbers are upper berths

When the wind blows from the direction in which the ship is bound, a sailing ship can, nevertheless, make her way towards her destination by what is called "plying to windward." This is effected by "beating" or "tacking," that is to say, by following a *zig-zag* course, by making alternate tacks or courses towards the direction of the wind, with the wind first on one side then on the other. A ship is said to be on the "Starboard tack" if the wind blows upon her star-starboard side, or on the "Port tack" if the wind blows on her port side. The "scuppers" or deck gutters, on the lee side become receptacles for all that is dropped or upset, animate or inanimate.

A word or two may be well on the *motions* of the ship such as "rolling" "pitching," and "scending." *Rolling* occurs when the two sides of the ship play see-saw; steamers roll more than sailing vessels, for sails are a great steadying power. *Pitching* is the plunging of a ship's head in a seaway, when the two ends of the vessel play sea-saw. *Scending* is a modification of pitching, and occurs when the vessel is bodily taken up by a huge "sea," which carries or "scends" the vessel along down its declivity with a sort of cornerwise motion which gives the idea of great speed. It is obvious that pitching and scending diminish in intensity with the size of the vessel, and on large steamers are comparatively little felt, even in heavy gales.

It is, perhaps, hardly necessary to say much of the sails on a steamer, save to explain briefly the chief terms applicable to them. Of sails there are two main classes, the "square" and the "fore and aft" sails. The square are those that are stretched on yards that are placed across the masts. They take their names from the mast they are on and their height from the deck combined. The lowest are the "courses," the next above, "top-sails," and above them "top-gallant-sails," and so to "royals" and "sky-sails," with the prefix of fore, main, or mizen, according to the mast they are on. A three-masted vessel, with square sails on all three masts, is technically known as "ship-rigged;" if only on two of the three she is "barque-rigged;" if only on the foremast she is "schooner-rigged;" while, if there be square sails on the foremast, with only a square top-sail on the mainmast, she is a "barquentine." Then if she have only two masts she is "brig-rigged" if there be square sails on both, and "brigantine" if these exist only on the foremast, and a "topsail schooner" if there be a topsail on the foremast. These technical names belong to all vessels, whether steamers or not, because all vessels are described by their rig.

Many vessels, however, only carry "fore and aft" sails, or sails attached up and down the mast, and spread in a fore and aft direction. Such a vessel with three masts is a "three-masted schooner," with two, a "schooner," or a "yawl." If with only one mast she is a "cutter," if there be two "head" sails, or sails before the mast; and a "sloop" if there be only one of these sails. The Lateen rig, so often seen in the Mediterranean, is formed by a stumpy mast bearing forward and supporting a yard of enormous length with a triangular sail. It is a picturesque rig, but not good in stormy latitudes.

Some of the latest built Orient steamers have four masts, the aftermost of which is called the "jigger mast."

The passenger will notice the fore and aft sail on the lower mast, stretched out on a "gaff" above and sometimes on a "boom" below. On masts that may be "square-rigged," *i.e.*, having yards across them, these sails become the trysails; fore, main, or mizen, according to mast. If the masts are not "square-rigged" they become simply the "mainsail," &c. Other fore and aft sails are called stay-sails." These, as their name implies, are set on the "stays," *i.e.*, strong ropes extending from the upper end of the masts towards the bow of the ship. These stays take their name from the mast to which they are attached—as the "fore-stay," the "main-stay," the "foretopmast-stay," and so forth; and the "stay-sails" are named from the "stay" on which they may be set. These sails are triangular in shape; those of their kind that are set on to the bowsprit, if bowsprit there be, may at times be called "jibs."

There are other sails that the steamer passenger may see, not on his own ship, but on others which he will fall in with on the voyage. Such as "studding sails," set at the side of the square sails in fine light winds; and he may see at the same time "water sails" hung under the booms, and "moonscrapers" sent up "all flying," *i.e.*, yard and sail hoisted right away from the deck to the truck, and there set to catch light airs aloft when it is calm below. But these picturesque devices are becoming things of the past, giving way before the advance of steam.

From sails we turn naturally to *ropes*. The uninitiated will like to classify them according to the material of which they are manufactured. There are Coir, Manilla, and Hemp ropes. "Coir" (pronounced kye-ar) is made from the fibrous husks of the cocoa-nut; "Manilla" from the leaf stalks of the plantain; "Hemp" is ordinary rope dressed with tar, sometimes called "Europe." Each kind is used in the work for which it may be best adapted. "Coir" is strong, stiff and elastic; "Manilla" weaker but pliable when dry; "Europe" is heavier and stronger but not so pliable as "Manilla." There is also wire rope, used for standing rigging and warps.

The saving of labour, so essential in all the pulling and hauling, is effected by the aid of blocks (on shore known as pulleys). The simplest method, called a "whip," is a single rope rove through a single block to lift or move light articles. More complicated arrangements of blocks and ropes are called tackles (pronounced *taykles*), and power is gained in proportion to the number of blocks used in connection with the rope.

Every rope in a ship is named. The sails are hoisted and lowered by "halyards;" they are spread out by ropes termed "tacks and sheets;" they are gathered in by "clew lines," "bunt lines," and "leach lines," ropes fastened to the lower corners, bottoms, and sides of the sails. Sail is "made and taken in" by hauling upon these various "lines" or ropes. It is then, if need be, "furled" or "stowed" by being rolled up neatly and closely, and bound by "gaskets" or ties. "Shortening sail" is the reduction of the area exposed to the wind. This is done by "clewing up," "furling," or "stowing" some of the sails, and by "reefing" or lessening the size of others; an operation performed by rolling or folding up part of the sail, and keeping it so by means of "reef points," short ropes fixed to the sail for the purpose. "Trimming sail" is keeping the plane of the sails at the requisite angle to the wind. This is accomplished with the square sails by the means of "braces" or ropes from the ends of the yards to the ship's side; and with fore and aft sails by the aid of the "sheets" that connect either the "boom," or the lower corner of the sail with the deck.

It is obvious that as nearly all the ropes lead to the deck the seaman should have a familiar knowledge of the exact position of each rope, without being obliged to look aloft and trace the particular rope to its "belaying-pin" or fastening place on deck, for usually there is no time to trace it, and more often than not he has to work in the dark night; the whole arrangement is, however, simple; and a landsman may by watching easily "know the ropes," *i.e.*, learn the name and use of every rope fastened to the deck without the need of a glance aloft.

There is another important item in regard to the ropes, and that is the coiling of them. They have lengths that must be kept on deck, as much as possible out of the way, and in a form ready for use, that is for running out without entanglement. For these purposes they are coiled down. But as with all other things, there is a wrong and a right way of "coiling;" and the wrong leads to kinks, loss of temper, and may be, to disaster. Nearly all ropes are laid up "right-handed," and, to avoid kinks, must be coiled down "with the hands of the clock." Any one may detect the amateur coiler by observing him miss any one of the following precautions. The first thing is to see the rope well fast on its "belaying pin;" next, the whole of its length is shaken out over the deck; then the sailor begins to coil as near the pin as possible, continuing his work until the end comes to hand. The coil is then upside down, and must be taken by the side furthest from the pin and overturned. The rope will then be ready for use.

On the steamers of the Orient Line, when weather permits, it is customary to lay the ropes on the deck in flat discs of various elegant devices; this is termed "flemishing down."

A word or two may be acceptable on *knots*. Many a man and woman has found the high practical value ashore, and especially in the bush, of a familiarity with knots. A trip at sea affords capital opportunity for acquiring this useful knowledge. Burglars have been secured and spirit-mediums exposed, animals captured, and endless traces, stirrups, and breakdowns generally, temporarily but efficiently and immediately repaired by the aid of such knowledge. The sailor uses some half dozen hitches and their simplicity makes them at once handy, easy of making, and reliable. The most useful hitches are the "half," "clove," "timber," "Blackwall," and "rolling" hitches; invaluable for making fast the ends of ropes to anything. The "figure of eight," "bowling," and the "running bowline" respectively make a knot and a loop at the end of ropes. The "reef-knot," the "fisherman's bend," the "sheet bend" (perhaps the least known but the most useful of all) and the "hawser bends" are all that are necessary to make one rope's end fast to another. The length of a rope is ably reduced by the "Sheepshanks." None of the above mentioned knots will jam no matter what the strain upon them, (*i.e.* they can be readily undone,) and they can, with practice, be quickly tied. We mention their names, that the passenger may before the voyage is over become acquainted with them.

Of ornamental knots and plaits and so forth there is no end, and idle fingers may find many less useful occupations than practising them. Occasion may be taken also of the opportunity to learn the simple and useful accomplishment of "splicing" or joining ropes together so that the join hardly shows, and of making "eyes," or neat useful loops at the end of ropes.

There is much interest in watching the manœuvring of a vessel. The course or direction of a ship in motion is speedily affected by the movement of the rudder. Small and of apparent insignificance it nevertheless holds almost absolute sway over the action of a vessel that is moving through the water.

> "Like a thought it has control
> O'er the movement of the whole."

"Behold, the ships also, though they are so great, and are driven by winds, are yet turned about by a very small rudder, whither the impulse of the steersman willeth."

Although a steamer of 455 feet length has a rudder only seven feet six inches wide, yet that small width alters immediately the direction taken by that great length.

The rudder itself is "hung" or hinged upon the sternpost, and its "head" penetrates through the decks to where the "tiller" or "helm" can be conveniently attached as a handle to turn the rudder. When a vessel moves swiftly through the water great pressure bears upon the rudder, therefore mechanical appliances must be adopted to move it with the required ease. If the tiller of such a large steamer as above instanced were worked by hand, as it is in small boats and yachts, it would take the united efforts of some twenty men to keep command over it. But by the aid of steam, or hydraulic machinery, the largest ships can be steered by one man.

It is necessary to remember that the terms applied to steering are used as though the helm or tiller itself were worked without the aid of machinery. Indeed, by the words starboard and larboard, we are carried back to the old Norse days when the steering was done by a large oar; and the "helm's-man" stood on a raised platform, on the right-hand side of the ship, hence the term "starboard," standing or steering side, from *steoran* to steer, and *bord*, a plank or border. "Larboard" may come from *lar*, a contraction of lower, *i.e.*, humbler in rank, not on the steering side; whence in French it is called *bâbord*, from *bas*, low. As the two words are similar in sound, but directly opposite in meaning, it is not surprising that this was found confusing. It was not, however, till the year 1845 that the English Admiralty took the lead in disestablishing "larboard" altogether, and setting up "port" in its stead. The French authorities followed suit in 1881, and issued an order that *bord-tri* and *bord-bas* should be substituted for *tribord* and *bâbord*. When the steersman receives the order "Port," he pushes the tiller towards the port, or left-hand, side of the ship and so causes the head of the ship to move to starboard, or towards the right. If the order be "Starboard," the tiller is pushed towards the starboard, or right-hand side, of the ship and her head turns to port or to the left.

Port and starboard are the usual terms in steering, but we also hear of "up with the helm," "down with the helm," and "steady." When the wind blows strongly against the side of a ship it makes her heel over, so that one side is higher above the water than the other. To put the helm "up" is to thrust the tiller "up hill," or to the weather side of the ship, and to put the helm "down" is to thrust the tiller "down hill," or to the lee side; to "steady" the helm is to bring it again to the middle of the vessel, and so relieve the vessel of the effect of the action of the rudder. When the tiller or helm is as far over to one side or the other as it can go, it is said to be "hard over;" "hard-a-port," or "hard-a-starboard;" or "hard-a-weather" and "hard-a-lee" as the case may be. By putting the helm "down," the vessel's head is brought up towards the wind or " luffed," while by putting the helm "up," the vessel is made to " bear up," or " pay off," from the wind.

It is evident that something may happen to the tiller or rudder-head and so render the rudder uncontrollable. It is therefore usual to fasten to the after-part of the rudder itself two chains by which, should need arise, the rudder could be moved in the absence of the tiller. Moreover, in the event of accident to the rudder, it is possible to rig a substitute. A spar is towed astern. From the farther end of this spar lines are led to both sides of the ship's stern, she may then be steered by pulling on either line as requisite.

In steering with a wheel, the mechanism is generally so arranged that the spokes of the wheel must be pulled down towards the side to which it is wished to turn the head of the vessel. In good steering the helm is altered frequently, but very little each time, the good steersman being always on the watch, noticing every little tendency to deviate from the course, and at once endeavouring to check the same, by a quick but small action of the helm. The reader will not forget that the rudder is there to govern the direction in which the ship *goes*; and that it is powerless unless the ship be moving through the water, or the water moving past the ship. Some people have an idea the rudder can turn a ship at any time; and in boats one frequently sees the uninitiated working the tiller when the boat is lying in still water. Finally, it must be remembered that, in turning, a ship does not pivot on her stern post, but somewhere nearer her head. Her stern where the controlling power is, naturally moves her bow.

There are various manœuvres performed by steering, among which "tacking" or "going about,"—*i.e.*, changing the course by bringing the wind first on one side and then on the other in beating to windward, (see page 247), does not apply to steamers. Another manœuvre, that of "heaving to," has, however, still to be performed by steamers in heavy gales, or should the engines break down. The easiest position for a vessel when the sea is very heavy is to keep nearly bows on to it, but not to go ahead more than three or four knots thus keeping the vessel under command without forcing her into a conflict with the waves. If the gale be too furious to be faced, sails are set, and by turning the steamer's head a little from the wind, the sails are kept what is termed "full"; she thus forges slowly ahead and and rides more easily over the seas.

We will next consider the steamer's anchors. Sea-going vessels, as a rule, have five anchors ready for use. The "stream" anchor is for light work and emergencies. The "kedge" is still lighter than the stream, and is used for warping, &c. The "sheet" anchor is a spare anchor, for times of special urgency or danger. The remaining two are the working or "bower" anchors which are kept at the bows of the ship, ready for immediate use; attached to the bower anchors are the cables, which pass out from the lockers in which they are stowed, through the "hawse-holes" in the bow of the ship, and are shackled on to the bower anchors.

Cables, at one time made of hemp, are now made of chain; the weight of this chain in the water gives to the cable a certain elasticity proportionate to the length used.

The anchors at sea are "stowed" or carried securely lashed on the bows till the time approaches when they are likely to be wanted. The cables are then "bent" or shackled to the anchors. The anchors are next "unstowed" and hung out over the side from the projecting "catheads" from which they are "let-go" at the right moment. The requisite amount having been allowed to run out, the cable is then fastened securely or "bitted and stoppered" on board.

When the vessel is to be got under way, the cable is wound in by means of a capstan worked by steam until the anchor be right under the vessel's forefoot, and may be easily broken out of the ground. The anchor is now said to be "a-peak." Then comes the order, "start the anchor," when the anchor, is broken out of the ground, and wound up out of the water; the anchor is next brought to its place at the bow, by means of large tackles called the "cat and fish."

The term "moored" applies when two anchors are used at the same time, or when the vessel is "made fast" to buoys or anchors permanently fixed in the harbour. The passenger who wishes to study mooring as a science will probably have an opportunity in the Suez Canal, where "tying up" is sometimes performed with marvellous celerity. It is the same with the delicate operation of "letting go."

The twenty-four hours are divided off at sea into "watches" of four hours each. But in order that the same set of men should not always be at work the same hours a daily shift is created by dividing one watch, that from 4^h to 8^h, in the afternoon, into two, termed the "dog" watches. Etymologically the word is probably a corruption of "docked;" although Theodore Hook found its derivation in the fact that these watches are "*cur*-tailed." They are termed the first and second dog-watches, and are followed by the "first-watch," terminating at midnight; the "middle watch," from 12^h to 4^h a.m.; the "morning watch," from 4^h till 8^h a.m.; the "forenoon," from 8^h a.m. to noon; and the "afternoon watch," from noon to 4^h p.m.

On the Orient Line, as in all other leading passenger lines, special precautions are taken in regard to "lookouts." Two men are always stationed, one on each side of the forecastle, or on the lookout bridge, for the purpose of reporting anything that comes into sight. As this necessary duty requires the greatest vigilance, these men are relieved every hour.

Time on board ship is marked by "bells"; the bell is struck in single and double strokes. From the beginning of each watch one stroke is struck for the first half-hour, two for the second, and so on until "eight bells," or "four bells" in the first dog watch, marks the change of watch.

"Sail ho!" is a cry which always rouses interest on board, and a desire is felt to pass within hail of the strange ship, and exchange greetings.

"Speaking a ship" at sea is much resorted to, chiefly for purposes of giving and telling ships' names, with a view of reporting on arrival in port; occasionally the longitude is asked, and not unfrequently important news given. It is seldom that the vessels approach near enough to one another for the use of the speaking trumpet. The more usual method is by means of flags working a code which is registered in a book. The code now in universal use is that known as "the Commercial Code," which has been adopted by all the leading nations: the flags representing the consonants of the alphabet.

There are certain occasions at sea when signs are necessary which tell their own tale at once, without reference to any code. Not long ago, a signal made at sea might mean anything. Rocket, gun, blue-light, or flare-up might mean that a ship was in distress, or wanted a pilot, or was amusing herself. But the Board of Trade has now, by the 18th and 19th Sections of the Merchant Shipping Act, directed that these signs should have a definite meaning. According to these new rules, a blue light every fifteen minutes, or a white light flashed at short or frequent intervals for about a minute each time, are signals for a pilot. A gun at minute intervals, "flare-ups," or rockets and shells, fired *one* at a time, at short intervals, are all signals of distress; and there are heavy penalties enjoined against those who use these signals unnecessarily.

All the large steam lines have night signals peculiar to themselves, registered with the Board of Trade. The night signal of the Orient Line is red and blue lights burned alternately.

To prevent collisions legislation has established the well-known "Rule of the road at sea." And it proves how good the rules are that considering the large number of vessels traversing narrow seas in every direction night and day collisions are so few and far between. There are two classes of vessels moving across the sea; steamers and sailing vessels; and the cardinal rule of the road is that steamers keep out of the way of sailing vessels, no matter how they are meeting or coming near each other.

There are three ways by which vessels approaching each other at sea may come into collision—*viz.*, by meeting "end on," by crossing, and by overtaking.

1. Vessels *meeting "end on,"* pass to the right of each other; go to starboard or to the right by "porting" the helm; doing exactly the opposite to what a driver in a London street would do.

2. Vessels *crossing each other* require more complex rules. If they are both steamers that one which has the other on its right hand or starboard side *must keep out of the way.* If they are both sailing vessels and both "close hauled," *i.e.*, beating to windward, then the one with the wind on her left side, that is the one on "the port tack," must keep out of the way of the other on "the starboard tack." But if one sailing vessel is "going free" and the other is "close hauled," the one "going free" must keep out of the way.

3. With vessels *overtaking* one another, the overtaking vessel has to keep clear of the other; but the overtaken ship must show from her stern a white light, or a flare-up light.

A steam ship under way may indicate the course she may be steering to any other ship which she has in sight by the following signals on her steam whistle, viz.:—

> One short blast to mean "I am directing my course to starboard."
> Two short blasts to mean "I am directing my course to port."
> Three short blasts to mean "I am going full speed astern."

The use of these signals is optional, but if they are used the course of the ship must be in accordance with the signal made.

Lights.—On each bow of a ship when under way is carried a bright light, showing the light on its side of the bow only, and round an arc of a little more than a right angle, 112°. The light on the starboard bow is green; that on the port bow is red. (These colours may be remembered by the fact that the light on the *port* side is the same colour as *port* wine.) Steamers *in addition* carry a bright white light at their masthead; and steamers towing other vessels carry two white lights at the masthead.

On a ship, whether a steam ship or a sailing ship, when at anchor, is carried, where it can best be seen, but at a height not exceeding twenty feet above the hull, a white light, in a globular lantern of not less than eight inches in diameter, and so constructed as to show a clear, uniform, and unbroken light; visible all round the horizon, at a distance of at least one mile.

1. In regard to vessels *meeting end on* we have such rules as the following, known to all sailors :—

> "Green to green, or red to red,
> Perfect safety, go a-head."

or again,—

> "When *both* side lights you see ahead,
> Port your helm, and show your red."

2. In the case of *vessels crossing* we have a fertile cause of collisions by reason of the fact that in too many cases they follow the rule which *only applies to vessels meeting end on.* Hence it is said that *the reckless use of Port Helm leads to collision.* There is a short rule for vessels crossing:—

> "If to your starboard red appear,
> It is your duty to keep clear,
> With green to port you've nought to do,
> For green to port keeps clear of you."

3. In regard to "overtaking vessels" the overtaken ship (inasmuch as she can see the bow lights of the overtaking vessel, whereas the overtaking vessel may see nothing of her), must take care to let the other vessel know that she is to keep out of the way, by showing a white light or burning a flare-up over the stern.

Fog.—Among the International Regulations for preventing collisions at sea, are the following rules for signals in fog or mist:—

1. Every ship, whether a sailing ship or steam ship, shall in a fog, mist, or falling snow, go at a moderate speed.

2. Steamers under way make a prolonged blast at intervals of not more than two minutes on their steam whistles or horns.

3. Sailing vessels under way shall make with their fog-horns, at intervals of not more than two minutes, when on the starboard tack, one blast; if on port tack, two blasts in succession; and three blasts in succession if with the wind abaft the beam.

4. All vessels at anchor to ring a bell at two minutes' interval. *Turkish* vessels beat a drum.

Such are the various classes of rules; but in all cases safety depends on a good look-out being kept. Nor is this necessary only ahead, for in these days of steamers vessels come up abeam with startling rapidity, and if abaft the beam they may not see the side-lights. Careful "look-out" both by officers and men, is a point insisted upon in the Orient Line.

NAVIGATION.

Navigation, or the art of Piloting, was divided by the early mariners into two parts: common and proper. Common Piloting is that knowledge which teaches how to coast along shore, or to sail or steam within sight of land. Proper piloting is that knowledge which teaches how to sail or steam across the ocean out of sight of land, and to navigate by aid of celestial instead of by terrestrial bodies.

On the Orient steamers, passengers will notice with what perpetual care and watchfulness the navigation is conducted. The "taking of observations" by captain and officers about the time of waiting for the breakfast bell, and at noon-day; the frequent manipulation of the azimuth compass that stands conspicuous on the navigating bridge, are every day operations of which the observant passenger will inevitably desire some intelligible explanation. An acquaintance with the first principles of navigation can be acquired by a little application during the voyage; such knowledge may prove of practical value to men with exploring or travelling duties before them.

The Navigator is always required to know his position on the surface of the globe, or the latitude and longitude in which the ship under his care may be situated.

Taking a Departure.—The local pilot having left the ship, the navigator's first care is to take a departure, that is, to carefully fix the vessel's position on the chart by means of taking cross bearings (see page 271) of two or more known and conspicuous objects upon the land still in sight. This forms the initial position for the voyage. From the latitude and longitude thus obtained, the first course is shaped, and first distance reckoned. By taking a careful *departure* at the beginning, the sailor gives fair promise of making a good *landfall* (see page 270) at the end of the voyage.

It may be here necessary to call the reader's attention to the nature of the sphere, and to a few of the definitions in spherical geometry that will aid him in comprehending the first principles of navigation.

A Sphere is a solid described by the revolution of a semi-circle about its diameter, that diameter being immovable during the motion of the semi-circle.

Axis and Poles.—This diameter is called the axis of the sphere, and its extremities the poles.

The Centre, Axis and Radii of a sphere are the same as the centre, axis, and radii of the generating semi-circle.

Great Circles may be defined as circles marked upon the sphere by a right plane cutting the sphere through the centre, and dividing the sphere into two equal parts. Therefore all the great circles of the same sphere are equal to each other, and the centre of the sphere is the common centre of all its great circles.

Small Circles are those circles drawn upon the surface of the sphere by right planes cutting the sphere, but not passing through its centre, and therefore dividing the sphere into two unequal parts. Hence small circles, unlike great circles, are not equal to each other.

Parallel Circles of the sphere, are those small circles, the planes of which are parallel to the plane of some great circle.

The Poles of a circle are those points upon the surface of the sphere that are equally distant from the circumference of that circle; but great circles are equally distant from *both* their poles; while small circles are unequally distant from *both* their poles. For example: all parts of that great circle, the terrestrial equator, are equally distant from both north and south poles; while all parts of the small circle, known as the parallel of London, although equidistant from the North Pole, are much nearer to that pole than they are to the South Pole. The pole of every great circle is at 90 degrees distance from it on the surface of the sphere; and no two great circles can have a common pole.

A Spherical Angle is the inclination of two great circles of a sphere meeting each other.

A Spherical Triangle is a figure formed on the surface of the sphere by the mutual intersections of three great circles.

The Shortest Distance between two points upon the surface of a sphere is the arc of a great circle passing through those points.

The Earth's polar diameter being slightly (26 miles) less than its equatorial diameter the Earth is not a true sphere, but what is called an "oblate spheroid;" still for the general purposes of navigation, the earth is treated as a sphere.

Latitude is the distance the ship may be directly north or south of the Equator, that great circle on the earth which is equidistant from the North and South Poles. Latitude is measured on the Meridians, in degrees that are all equal to each other, and of which there are ninety between the Pole and the Equator.

Meridians are great circles passing through the North and South Poles, and cutting the Equator at right angles.

Nautical miles, or knots.—All direct distances in navigation are measured in nautical miles or knots. A nautical mile is the sixtieth part of a degree of latitude, and being 267 yards longer than the statute mile, great care must be taken not to confound the nautical mile with the statute mile, the sea mile with the shore mile.

To convert knots into statute miles, multiply the number of knots by 1·15, or roughly, add one-sixth of the number of knots—six knots being equal to nearly seven statute miles.

Longitude is the distance a ship may be directly east or west of the meridian of Greenwich, or the great circle upon the earth that passes through Greenwich Observatory and the north and south Poles. Longitude is reckoned in degrees which, unlike the degrees of latitude, are not all equal to each other, but vary in size according to the latitude in which the longitude is reckoned. Longitude is therefore measured on the equator, being the distance on that great circle intercepted, east or west, between the meridian of Greenwich, and the meridian passing through the position of ship. The cause of this inequality in the degrees of longitude will readily be seen by looking at a terrestrial globe. On this practically true representation of the earth, it is evident, that although the degrees of latitude are all equal to each other, yet there must be a great difference, in different parts of the world, in the length of the degrees of longitude. At the equator they are certainly like those of latitude, each equal to 60 nautical miles, but through the meridians all converging towards the pole, the size of a degree of longitude varies with its distance from the equator. Its length depends therefore upon the latitude in which it is reckoned. For instance, a degree of longitude which at the equator is equal to 60 nautical miles, in latitude 30° is equal to 52, in latitude 60° to 30, and in latitude 80° has decreased to about 10½ nautical miles. Longitude is also measured in time, that is, in hours instead of degrees, for the following reasons: the earth, in her motion on her axis and in her orbit round the sun, describes, once in nearly 24 hours, a complete circle, 360 degrees. Hence the longitude of a place may be measured by the time the earth takes to revolve through the distance between the meridian of Greenwich and the meridian of that place; that is, the earth turns through 360 degrees in 24 hours, through 180 degrees in 12 hours, through 90 degrees in 6 hours, and through 30 degrees in 2 hours. A place therefore may be said to be situated in longitude 30 degrees east, or in 2 hours east of Greenwich. The map of the world further on in this Chapter, will fully illustrate the above remarks upon longitude, and the following notes upon arc and time.

Arc and Time.—In reckoning by arc or by degrees, each degree is divided into 60 minutes, and each minute into 60 seconds. In reckoning by time or by hours, each hour is similarly divided into minutes and seconds. But a distinct notation for each of these has been adopted; degrees, minutes, and seconds being represented by $^{\circ}\ \ '\ \ ''$, and hours, minutes, and seconds by $^{h}\ \ ^{m}\ \ ^{s}$; and care should be taken not to use the same marks for both, as great confusion will arise from so doing:—One minute (^{m}) of time being equal to 15 minutes ($'$) of arc. Longitude in arc and longitude in time are easily convertible, for since 360 degrees is the equivalent of 24 hours, 15 degrees is equal to 1 hour, 1 degree to 4 minutes of time, and 1 minute to 4 seconds of time; or $360^\circ = 24^h$, $15^\circ = 1^h$, $1^\circ = 4^m$, and $1' = 4^s$, or *vice versâ*, $24^h = 360^\circ$, $1^h = 15^\circ$, $1^m = 15'$, and $1^s = 15''$.

Charts.—A chart—without which navigation would be almost impossible—is a marine map intended especially for the use of seamen. A chart is constructed for the purpose of ascertaining the position of a ship with reference to the land, and of finding the direction in which she is to steer, and the distance she has to sail or steam.

For the purposes of navigation it is necessary to exhibit the seas and oceans on flat surfaces. Charts are therefore artificial representations of portions of the earth's surface delineated upon a cylinder instead of upon a sphere. To comprehend this statement it may be necessary to remember that *a cylinder* is a solid figure described by the revolution of an oblong, or right angled parallelogram about one of its sides, which side remains fixed. The idea of representing the earth's surface upon a cylinder, conceived by Gerard Mercator, a Fleming, in 1569, and perfected by Edward Wright, an Englishman, is known as Mercator's projection, and charts constructed upon this principle are universally used, as upon such charts the track of a ship always steering the same course appears as a straight line.

On the globe the meridians all converge towards the pole, the degrees of latitude are all equal to each other, those of longitude unequal: on a Mercator's chart the meridians are drawn as parallel lines, and the degrees of longitude are all equal to each other. To compensate for this error, the degrees of latitude on the Mercator's chart are distorted, being extended as they leave the equator beyond their true lengths, in the same proportion as the degrees of longitude on the globe diminish in size as they approach the Pole. The length of the degrees of latitude on a chart consequently increases as the latitude increases, three and a-half degrees in the latitude of 70° being equal to 10 in the neighbourhood of the equator. It is, however, only when equatorial and polar regions are thus contrasted on the same chart, that the distortion is so evident; contiguous countries and seas appear but little out of their true proportion to each other, and no other projection has been discovered that so well meets the general requirements of the sailor.

In a chart, the upper part, as the spectator holds it, represents the *true* north, and that towards his right hand the east; latitude is accordingly measured on the right or left sides of the chart, and longitude on the top or bottom edges. All distances must be measured upon the latitude scale, using that part of the scale which is in the same latitude as the ship; *e.g.*, distances between places in latitude 50° and 60° must be measured upon the latitude scale between 50° and 60°.

The Admiralty Charts, which number over 2,600, are published with a view of meeting the wants of the sailor in all parts of the world. They may be classed under five heads, viz.:—Ocean, General, and Coast Charts, Harbour Plans and Physical Charts. Leaving the Ocean Chart on approaching the land, the sailor turns first to the General Chart, next to the Coast Chart, and lastly to the Harbour Plans. These *plans* of harbours, islands, &c., are constructed on convenient scales for reference when a ship is close in with the land. On these plans are inserted the *leading marks* for channels (*i.e.*, two conspicuous objects which if kept in line, or one in front of the other, *lead* clear of dangers), or for avoiding hidden rocks or shoals, with numerous other details of importance to the sailor.*

Soundings.—The surface of the sea on charts will be seen to be studded with numerous small figures. These are the soundings; they indicate, in fathoms or feet, at low water spring tides, the least depth of the water through which the ship may be moving. They show the nature of the unseen bottom of the sea, and give information of the utmost importance to the sailor. No matter how well the land may be surveyed or finely delineated, unless the soundings are shown, a chart is of little use to the navigator.

Lights and Buoys.—On the Coast Sheets and Harbour Plans all Lighthouses, Light-ships, Gas-buoys, Buoys and Beacons are most carefully shown; and their several characters, colours, and ranges of visibility clearly noted. In consequence of the changes that are constantly occurring through the building of new lighthouses, the improvements and alterations in the character of the old lighthouses, the changes that necessarily happen in the buoyage of channels, the discovery of new dangers, and the variations that in the course of time take place in the mouths of rivers, the charts in use on board ship perpetually require correction. The Admiralty and Trinity House issue from time to time *Notices to Mariners*, giving full information upon these alterations, which it is the duty of the sailor to see made upon his charts. The Orient Company have their charts inspected and corrected before each voyage, and every care is taken to insure their steamships leaving port as efficiently provided as are the vessels of Her Majesty's Navy.

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* See Catalogue of Admiralty Charts, with Index Charts.

N.B.—The Admiralty Charts are corrected from time to time for the latest changes in lights and buoys, the date of correction being noted at the foot of the charts.

The Mariner's Compass.—The applicability of the magnet for the purposes of Navigation was recognised in Asia long before Europeans were aware of its value. The Chinese used the magnet in 2634 B.C., calling it *tchu-chy*, the directing stone, and the earliest travellers speak of Arab sailors floating the magnetic needle in water and so finding their north. The compass is an instrument which utilises the directive force of the magnet. The needle, or magnetised bar of steel, is attached to the under side of a circular card carefully poised upon a fine point rising from the bottom of a brass bowl. The circumference of this card represents the horizon, and is first divided into four quadrants by two diameters perpendicular to each other; the ends of these diameters forming the four principal points, or as they are called the *cardinal points*, are North, South, East, and West; and are written by their initials, N., S., E., and W. Each of the four quadrants is divided into eight equal spaces, and the points dividing these spaces are called "points of the compass;" accordingly, there are thirty-two points of the compass. The compass is also divided into 360 degrees, each quadrant containing 90°. The points are named by combinations of the four letters, N., S., E., and W. The quadrants which lie between the several pairs of the cardinal points are next equally divided, and the points so obtained defined as N.E., S.E., S.W., and N.W.; the two letters between which each point falls. These eight spaces are again equally divided, and the points so obtained named by the three letters between which the point falls, taking care always to place the *single* letter before the *two* letters, as N.N.E., E.N.E., E.S.E., S.S.E., &c. To form the remaining sixteen points divide equally the sixteen spaces. In naming these new points, the word "by," abbreviated (b) is used, and means "one point towards." It is always *followed* by *one* of the letters of the four cardinal points, N., S., E., W., and never by a *double* letter as S.E., &c.

Starting from N. and moving in the direction of the hands of a watch, the first new point we come to is one point from N. towards E., it is therefore called N. b. E. The next new point is one point towards E., before coming to N.E.; it is therefore named N.E. b. N. The next new point is one point towards E. from N.E., it is therefore called N.E. b. E. There is still one more new point before we come to E., it is one point towards N. from E., therefore named E. b. N., and so on with the other quadrants. Thus, each point has its name expressive of its angular distance from a cardinal point; for instance, N.N.E. means 22° 30′ from the North point towards the East, E.S.E. 67° 30′ from the South point towards the East. S. b. W. 11° 15′ from the South towards the West. To "box the compass" is to repeat the points in the right order. The *binnacle* is the case or box which contains the compass; it is glazed and furnished with suitable lamps to illuminate the compass at night.

Variation and Deviation of the Compass.—The magnetic needle seldom directs the north point of the compass card to the *true* North. There are two causes for this irregularity, known as Variation and Deviation, and named east or west as the north end of the needle is drawn to the right or left of the true North. Variation is the disturbance caused by terrestrial magnetism, and varies with the geographical position of the ship. The variation of the compass even in the same place alters in course of years. In London in 1580 the needle pointed 11¼ degrees to the *east* of the true North; about 1660 there was no variation; in 1819 it pointed 24¾ degrees to the *west* of the true North, since which time it has gradually returned towards the true North, as in 1887 the variation was only 17½ degrees westerly.

Deviation is a further disturbance arising from the effect of magnetic influences in the ship itself which carries the compass, such as the local attraction of the iron in the ship. These influences can be counteracted by such means as placing the compass above the deck out of the attraction of the iron in the hull, or by surrounding it with a counter attraction of magnets.

When it is desired to discover the total error of the compass, *i.e.*, the effect of variation and deviation combined, the "bearing" or direction of the sun is taken by the ship's compass, the *true* bearing is also calculated, and the difference between these bearings is the total error. The *true* bearing, or Azimuth of a heavenly body can always be obtained because its motions are known. Thus, when any heavenly body is at its highest altitude, it bears *true* North or *true* South of the observer, according to the latitude. Again, at rising and setting, the celestial body crosses the horizon at a known number of degrees from the *true* East or *true* West—the bearing at rising or setting is called amplitude. Tables called Azimuth Tables are published, giving the *true* bearing of the sun for every four minutes throughout the day, as well as its amplitude at rising and setting. To one of the compasses on board, known as the Azimuth compass, is affixed a small movable mirror which reflects the sun down to the horizon in connection with the compass, and so enables its bearing to be taken with greater accuracy.

In the steamers of the Orient Line the error of the standard compass is determined at least once in each watch, when the weather permits, and is duly recorded in a compass log for reference.

The necessity for this continuous watch over the compass will be readily admitted when it is remembered that an undiscovered error of half a point in that instrument, would, in a distance of 100 miles, place a vessel nearly ten miles right or left of her intended destination.

The Log may first be considered as the instrument by which the apparent distance sailed over in a given time is determined on board ship. The common log consists of a *log-chip* or *log-ship* (often exclusively called the log) and the *log-line.* The log-ship is a thin wooden quadrant of about six inches radius, loaded with lead sufficient to make it float upright; the log-line is the line attached to the log-ship: this line is divided, and marked in equal spaces, known as *knots* and *half-knots.* When used, the log, and some portion of the line known as the *stray-line,* is thrown over the stern, the log soon losing the impetus of the vessel, remains stationary in the water, and the line is permitted to run out freely as the ship steams onward, for an interval of time marked by a sand-glass known as the *log-glass.* The sand having run out, the line is stopped, and the length that has run out is the distance the vessel has travelled in the time shown by the sand-glass. As the knots and half-knots on the log-line are so placed that the length between each mark bears the same proportion to a nautical mile, as the time measured by the log-glass does to an hour no calculation is necessary, the number of knots run out representing the number of miles per hour at which the vessel is then travelling. The patent log is a piece of modern mechanism, that measures automatically the distance a ship travels at sea; a fan, that revolves a certain number of times in passing through a certain distance in the water, is attached to a box in which, by means of wheel work, these rotations are registered upon dials.

The term "Log" is also applied to the *Log-book,* or the official daily record of the ship's proceedings. The number of knots steamed, together with the *course, i.e.,* the direction in which the ship has been steered as shown by the compass, is entered every hour in the log-book in columns ruled for the purpose. The direction and strength of the wind, the height of the barometer, state of thermometer, the state of the weather, the bearing of any land that may be in sight, the soundings that may be obtained, the vessel's position every day at noon, anything in fact that relates to the navigation of the vessel, is religiously entered in the "Log."

Dead Reckoning is a method by which the ship's position is found from the courses steered, and the distance she appears to have run through the water. Every day at noon the progress the steamer has made in the past twenty-four hours is deduced from the hourly entries in the log-book; the amount of change she has thus made in her latitude and longitude is found by plane trigonometry, applied to the position found for the preceding day, and the new situation determined. The latitude and longitude so estimated are entered in the log-book as the "Position by

Dead Reckoning." The place of the ship thus found must however be considered as approximate, as, in working the dead reckoning, no account can be taken of unforeseen changes in the compass, drift caused by the violence of wind—errors that may occur, even in the most carefully conducted ships, in steering and logging. Nevertheless in fogs and cloudy weather, when the land, or sun, or stars, cannot be seen, dead reckoning is the only method of finding the ship's position, and the constant care of the good pilot is to see that the ship is kept upon her course, and that the distance run is correctly estimated.

Currents.—Among the causes which prevent the true position of the ship from being found by dead reckoning are the currents of the ocean. The ship is not only moving through the water, but that water may also be moving over the surface of the globe. There are Drift currents, and Stream currents, The Drift current is merely the effect of wind upon the surface of the water, as the drift of the Trade wind, where the whole surface of the sea is converted into a slow current moving to leeward. The Stream current is caused by the accumulation of this drift into a collective mass by the intervention of some obstacle; the water thus banked up takes the direction imposed upon it by the obstruction, and becomes a stream or current pursuing its way like a vast river through the ocean. These "oceanic rivers," of which the well-known Gulf Stream in the North Atlantic, and the Agulhas current in the South Indian Ocean, may be cited as instances, vary in breadth from 50 to 250 miles, and run with such rapidity as to be uninfluenced materially by wind, except near their borders. The stream currents are generally warm, and where they flow against the colder waters from the polar regions, sailors are prepared for unsettled weather, with cross and turbulent seas which always attend these meetings of the waters. As a practical knowledge of the localities, directions, and velocities of these ocean currents is most necessary to the navigator, special charts are published by the British Admiralty, giving full information upon this important subject.

Observation.—The invaluable and constant standard of reference in a ship is the compass. But the compass is seldom employed, as is sometimes imagined, as an independent guide. As has been before remarked under the head of "Dead Reckoning," the place of the ship found by compass and log-line must be considered as approximate. It is, therefore, indispensable that when weather permits, the ship's position should be obtained daily by astronomical observations. Before treating of the methods by which a ship's position is found at sea by the assistance of sun, moon, or stars, or "by observation," it will be necessary to describe briefly the instruments used in that process—viz., the Sextant, and the Chronometer. For the purposes of navigation, an instrument is required by which the angle at the eye between a celestial body and the horizon can be accurately measured. The want of such an instrument was severely felt by our forefathers of the sea, who nevertheless did great things in navigation by means of the cross-staff and astrolabe. The cross-staff consisted of a straight, square, graduated staff, with two wooden cross pieces, called *transversaries*, made to slide along it at their middle parts. The bearing of the sun was taken with the compass; then the end of the staff was held against the observer's eye, while an assistant moved the *transversary* until one end of it touched the sun's centre, and the other end the horizon. The astrolabe was a graduated circle, having a movable diameter carrying sight vanes; it was suspended by a ring made to represent the zenith, and the angle was measured by moving the diameter until it was directly in line with the sun from the eye. It was with such indifferent implements that our Elizabethan sea fathers got their altitudes, made their own charts, circumnavigated the globe, and overcame apparently insurmountable difficulties, by a capacity for taking trouble, and a desire to do well.

The Sextant.—The great want of an efficient instrument was met in 1730 by John Hadley, who by the invention of the sextant conferred a never-to-be-forgotten benefit upon the sailor. In the sextant, two mirrors, one movable and one fixed, are used to measure the required angle by means of reflection. The movable reflector, called the index glass, is placed at one end of a metal bar, on the other end of which is a vernier, that can be moved round a graduated scale, which is marked upon the curved side of the sextant. The fixed reflector, called the horizon glass, has only one half of its surface silvered; the observer looking at the horizon through the unsilvered half, by moving the bar carrying the index glass, causes the edge or limb of the reflected image of the heavenly body seen on the silvered half of the horizon glass, to just touch the line of the horizon. This done, the observer next clamps the bar to the graduated side of the sextant, makes a careful contact by means of a tangent screw, and then reads the required angle noted thereon. Shades are attached to the sextant to moderate the brightness of the sun.

Latitude by Observation.—Provided the sun or stars are in sight, and the horizon clear, the navigator can always obtain his position by observation. The heavens may be regarded as a hemispherical vault, termed the celestial concave, resting on the curved circular surface of the earth, in the centre of which curved surface he stands. Where the vault touches the circumference of this surface is the *Horizon*. Exactly over his head in the vault is the *Zenith*, distant therefore a little more than 90° from the *horizon*. Now in this vault is another point known as the Pole of the heavens. If this *Pole* was marked in the sky, the determination of the latitude would be simple, for it is a well-known astronomical fact that the ***altitude***, or angular distance of the *Pole* from the horizon, is equal to the latitude of the place. By means of the *Nautical Almanac* the sailor is able to find at any instant the distance on the celestial concave between the sun's centre and the *Pole*. This is called the *Polar Distance*. Every day at noon the sun on attaining its highest altitude, is said to "cross the *Meridian*." At the instant that the sun crosses the *Meridian*, the sailor measures the apparent *altitude* with his sextant. From this *apparent altitude* the *true altitude* of the sun's centre above the horizon is found by applying certain well-known corrections. Then by subtracting this *true altitude* from 90°, the true distance of the sun's centre in the celestial concave from the *Zenith* is known. This is called the *Meridian Zenith Distance*. The difference between the *Meridian Zenith Distance* and *Polar Distance* must be the distance between the *Zenith* and the *Pole*; which, if taken from 90°, will give the *altitude* or height of the *Pole* above the *Horizon*, which is the latitude of the place. This observation, to determine the latitude by sun, moon, or star, must be taken at the moment of the body's highest altitude—in other words, at its "meridian passage." This explains the assemblage of officers with their sextants every day when at sea, a little before noon.

It has been said above that if the "Pole was marked in the sky, the determination of the latitude would be simple." Now to a certain extent the North Pole, is so marked by having at the present time a bright star very near it known as Polaris. The altitude of this star is observed by sailors on favourable nights when the horizon is clear and illuminated by the moon, and after certain small corrections taken from the Nautical Almanac the latitude is obtained.

Latitude is also found on such nights from the Meridian altitudes of planets and bright stars, the process being the same as with the sun. The latitude and longitude is often obtained from observations of stars, taken just after sunset, or just before sunrise, the light at that time not being sufficiently powerful to obscure the star, and yet strong enough to illuminate the line of the horizon.

The Chronometer.—Time is an important element in the practice of navigation, for, as it has been before remarked, longitude is measured in hours as well as in degrees. All places upon the earth's surface have a different time (see chart), unless they happen to be situated exactly upon the same meridian—*i.e.*, upon the same great circle which passes through them and the Poles of the earth. There is Greenwich time, and Paris time, Melbourne time, and Sydney time. The cause of this difference of time is the rotation of the earth. As the earth revolves, every spot upon its illuminated surface must come in turn directly under the sun. At that instant the sun appears to attain its highest altitude, is said to be on the meridian of the place in question, and it is there noon, or 12 o'clock *by the sun.*

As the earth completes one revolution under the sun in about 24 hours and moves uniformly, it is evident that distances can be measured by time; the 360 degrees of the earth's circumference representing 24 hours, 180 degrees 12 hours, 90 degrees 6 hours, &c. If, then, we can ascertain the true difference of time between two places, we know the distance their respective meridians are apart, and therefore their *difference of longitude.* To find the time at the ship is a simple matter, as will shortly be shown; the difficulty is to find the time at Greenwich. Longitude, as has been before pointed out, is reckoned from Greenwich. If the time at Greenwich be accurately known, then the difference between that time and the time at the ship must be the longitude *in time.* The inability to find reliable Greenwich time at sea, the great difficulty with our forefathers, was solved by the invention, by J. Harrison in 1765, of the *Chronometer*, or as it has been well called, the *Timekeeper.* Hadley gave us the sextant; Harrison the chronometer; may their names live for evermore!

The chronometer is a watch of superior construction used by the navigator to determine his longitude. Its mechanism is upon the same general principles as that of a common watch, with the addition of a contrivance for counteracting the effects of changes in temperature. The chronometer is therefore furnished with a compensation balance, formed by a combination of metals of different expansive capacities. Another cause which affects the good going of watches is the violent action to which they are at times subjected. Chronometers are, therefore, defended from violence by their cases being lined with cushions; they are kept in a horizontal position by suspension in gimbals, and, on being received on board, are stowed in a room specially prepared for their reception, and on no account subject to removal or displacement. By means of the chronometer the navigator is able to carry in his ship that desideratum, Greenwich time. On leaving port he is careful to know the *error of his chronometer*, *i.e.*, how much it is fast or slow of Greenwich time; he also finds its *daily rate*, or the number of seconds the chronometer may gain or lose every twenty-four hours; by these means he is able, with very little labour, to tell at any required instant during the voyage the time at Greenwich, or what is known to the sailor as *Greenwich mean time.*

Longitude by observation.—Provided there is a clear horizon the time at ship may be found by the aid of the sun or stars. It will be sufficient here to explain how it is found by means of the sun. The sun, as it appears to pass across the sky, may be regarded as the hour hand of a great celestial clock, moving round the

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pole of the heavens as the centre of the clock. At the instant of the sun's attaining its highest altitude, or crossing the meridian, it is twelve o'clock *by the sun*. Could the hours be marked in legible characters upon the firmament, no observations nor calculations would be necessary; as, however, these facilities are denied to the mariner, he has to resort to a process by which he can determine the time at ship. In any spot on the earth of which the latitude is known, the time can be found from the altitude of the sun, because in its apparent course across the celestial concave, between rising and setting, the sun attains certain altitudes at certain times. By help of the sextant the altitude of the sun is measured, which altitude, corrected and subtracted from 90°, gives the distance of the sun's centre from the zenith; the known latitude subtracted from 90° gives the distance between the zenith and pole; while the distance of the sun's centre from the pole is found in the *Nautical Almanac*. Thus we have a great spherical triangle formed in the sky between the pole, the zenith, and the sun; from which, all the sides being known, the angle at the pole, or the *time*, is calculated by spherical trigonometry.

Attention must here be called to an important fact that the time obtained by observation at the ship is called *ship apparent time*, or time as would be shown by a sun-dial on shore. Before this time can be used to determine the longitude, it has to be corrected by what is called the *equation of time;* that is the difference between sun time, or time shown by a sun-dial, and the time shown by a clock going correctly. This difference, given in the *Nautical Almanac*, and noted in ordinary almanacs as "clock before sun," or "clock after sun," amounts twice in the year to more than a quarter of an hour. The *ship apparent time* is, therefore, corrected by the equation of time, and time by the clock, or ship mean time is found. At the instant of taking the altitude the time by chronometer is also noted, and Greenwich mean time obtained; the difference between which and the ship's mean time is the *longitude in time;* this converted into arc or degrees gives the *longitude;* named "west" if Greenwich mean time is *best*, or the greater; and "east" if Greenwich mean is *least*, or the lesser. The *latitude* has already been found from the meridian altitude of the sun, and the ship's position is thus satisfactorily determined by observation.

Greenwich mean time may be obtained at sea by the heavenly bodies independently of the chronometer. Certain phenomena can be predicted to take place at certain times at Greenwich, such as the eclipses of Jupiter's satellites, or the occultation of stars by the moon. In the *Nautical Almanac* is also a table showing at every third hour of Greenwich mean time the distances in the celestial concave between the moon and the sun, and also certain well-known stars, that lie in or near the moon's path. The moon is thus made to represent the hand of a celestial clock, showing *Greenwich mean time*, the sun and stars being considered as the figures on the dial plate, but not placed as in an ordinary clock at uniform distances. These distances, measured by a sextant and corrected for the effects of refraction and parallax, become the *true lunar distances*. With a distance thus observed and corrected, the *Nautical Almanac* can be entered and the corresponding Greenwich mean time found. Ship mean time being obtained at the same instant, the longitude can be found as before.

To observe the eclipses and occultations requires a steady and powerful telescope; to measure the distance between the moon and the sun and stars necessitates the possession of a superior class of sextant, advanced observing powers, and some labour in calculating the true lunar distance, the resulting determinations being much more liable to error than those obtained by chronometer. An error of half a minute of arc in measuring the lunar distance would affect the longitude to the extent of fifteen miles.

Making the land during or at the end of the voyage is one of the most important operations in navigation; to make a good *landfall* being a point of honour with a proper pilot. Letting it be granted that favourable weather has allowed the ship's position to have been obtained by observation, there is but little difficulty in making the land of a coast that is fairly laid down upon the charts. It is said that at such an hour a certain lighthouse or headland will be seen, or if soundings have to be taken, that such a depth of water will be found, and these predictions will be found to be trustworthy.

The Lead.—At times, however, the land has to be made when the sun or stars have not been seen for days; then is felt the value of keeping a good Dead Reckoning and possessing a knowledge of the currents. There are, of course, even to the passenger, numerous indications of the vicinity of land: coast birds and sea-weed may be seen, more vessels may be passed, and the water may change its tint; but in thick weather the captain, on approaching land, trusts to one of the best inventions for saving life at sea—to that simple but important instrument, *the lead*, which is nothing more than a piece of lead attached to a line measured and marked in fathoms, used to ascertain the depth of water through which the ship is moving. The depth of water and nature of the bottom of the sea is shown upon the chart by means of small figures called soundings (see "Charts," page 260). By their aid, and using the lead as a beetle does its antennæ, the pilot feels his way in towards the land, in the densest of fogs. Modern ingenuity has invented sounding machines by which the soundings in deep water can be obtained with greater facility, but the principle is the same, and when in less than twenty fathoms the old lead and line is still used. It may here be remarked that true sailors never neglect the four L's in navigation, *viz.*, Lead, Log, Lookout, and Latitude.

Cross Bearings, &c.—When in sight of land the position of the ship is fixed from time to time by taking what are called "cross bearings." Two straight lines can cross each other only in one point. If at the same time a lighthouse bear north from a vessel and a promontory north-east, and lines on their bearings are ruled from the same lighthouse and promontory upon the chart, the intersection of those lines must be the vessel's position on the chart. The place of the ship may also be found by the "four-point bearing." Any prominent point or building that may be marked upon the chart is watched as the vessel steams along until it bears four points on the bow—*i.e.*, if the ship be steering west, until it bears north-west—the time is then noted. The ship is carefully kept upon the same course, and when the same object is exactly abeam, that is at right angles to the course the ship is steering, the time is again noted. The object abeam will then be the same distance from the ship as she has run in the interval. Due allowance must be made for the set of the tide.

The distance from lighthouses or peaks and points of land, the heights of which are known, may be found by measuring with the sextant the vertical angles they subtend to the eye; tables are published in which the required distance will be found by entering the table with the observed angle and known height of the lighthouse or peak.

A hidden rock or shoal may also be avoided by means of what is called the "horizontal danger angle," based on the mathematical fact that the angles in the same segment of a circle are equal to one another. Two well-known and well-marked points, as two lighthouses, in the vicinity of the rock are selected; through these points a circle that also passes clear of the rock is drawn upon the chart; the angle subtended by the lighthouses at the circumference of this circle is next found. If by means of the sextant this angle is maintained between the lighthouses, the ship will be steaming along the circumference of the drawn circle, and therefore must pass clear of the danger.

Buoys will be also seen marking dangers, or the edges of navigable channels. In 1883 a uniform system of buoyage was adopted by the Trinity House to mark, by the character and colour of the buoys used, the port and starboard sides of channels; and also any middle dangers that might exist. This system has been carried out in England. Other nations have their own buoyage methods.

A uniform international system of buoyage would be a great boon to the nautical world.

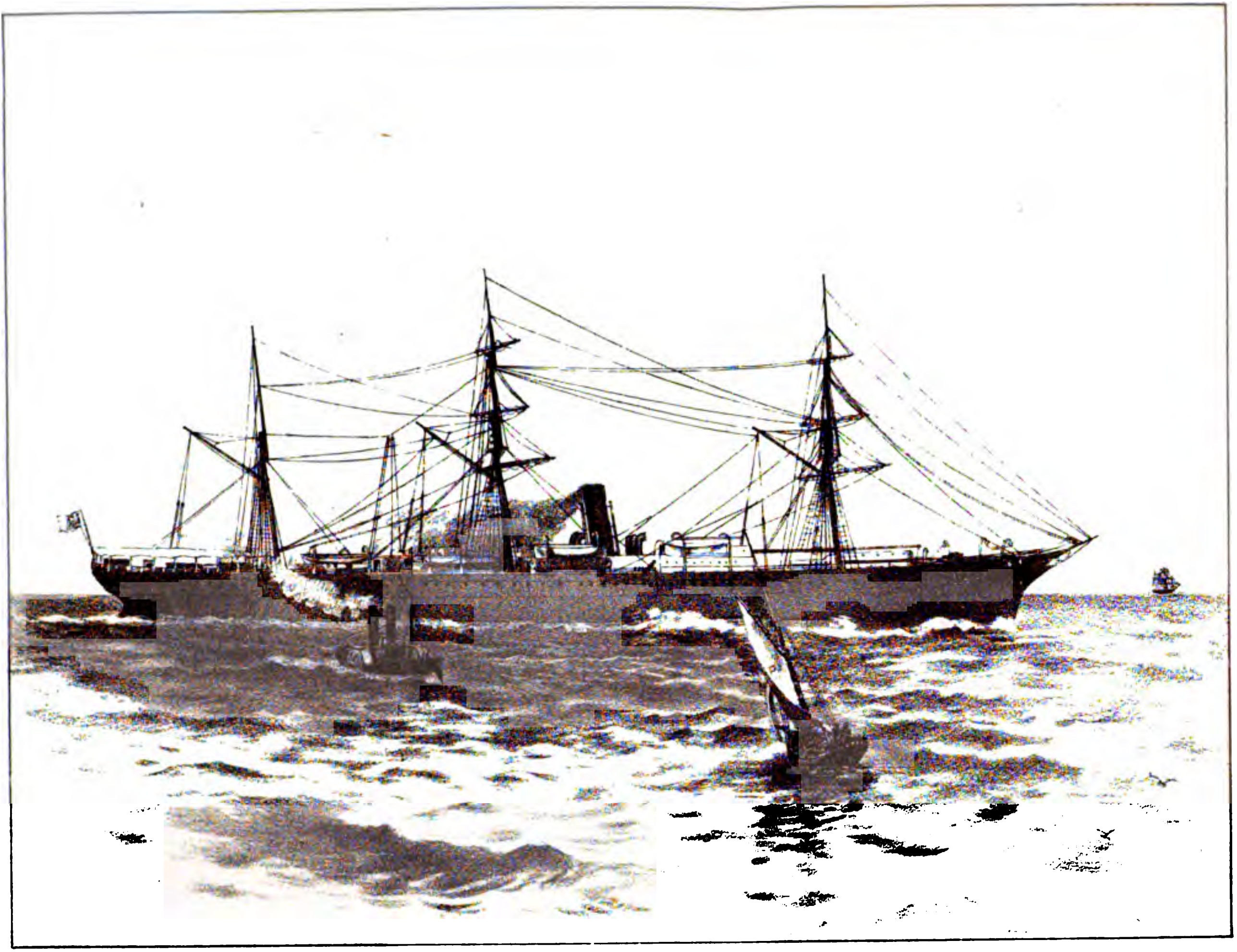
By night the lights on the coast make navigation easy. These lights are made to differ so that the sailor may the more readily determine the position of his vessel. One will be "fixed" another will flash every few seconds, while a third will "revolve" and show its light but once in a minute; some are coloured, others exhibit lights of greater or less brilliancy. In cases where the features of a coast are not strongly marked, or in hazy weather, it is easier to navigate by night than by day, because before one known lighthouse is lost sight of, another is recognisable.

Judging Distances at Sea.—The distance in miles of the visible horizon, is a little more than the square root of the height in feet of the observer's eye above the sea. For example, if the observer's eye on the deck of a steamer be twenty-five feet above the sea, the visible horizon will be over five nautical miles off. Any object seen at sea whose base is beyond or farther off than the horizon, must have the square of its own height in feet, added to the distance the observer is from the horizon, to give the distance of the object. For instance, suppose that the observer see only the topsails of a ship showing above the horizon, and these topsails are sixty-five feet above the sea, that ship will be about nine miles beyond the horizon, and fourteen miles distant from the observer.

Guns are often fired in a port. Take the time of the flash and the time of the sound reaching the ear. Divide the seconds elapsed by five, add one-twelfth of the quotient, and the result is the distance in statute miles. Most pocket chronometers beat 150 times in one minute, common watches vary. At a temperature of 60° Fahr. sound travels 150 yards in one beat of a chronometer, beating 150 times in one minute, so that if the beats of a chronometer be counted during the interval that elapses between seeing the flash and hearing the report of the gun, that number of beats multiplied by 150 will represent roughly the distance in yards of the observer from the gun fired.

When the port to which the vessel is bound to is approached, she is boarded by the local pilot, who conducts her to the anchorage; cross bearings to fix the position of which being duly taken, the navigator's duties cease for a season.

Although these methods for determining the ship's position may appear so simple as to be adapted to the meanest mathematical capacity, it must be remembered that however easy navigation may seem when carried on free of care and anxiety in a comfortable college or law court *on shore*, Pilotage, common and proper, will be found a very different business when pursued by responsible



S. S. "CUZCO", "LUSITANIA", "GARONNE" & "CHIMBORAZO."

S. S. "CUZCO."
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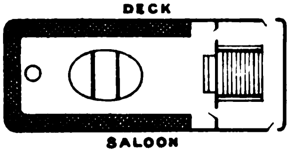

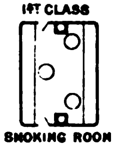

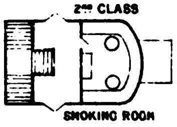

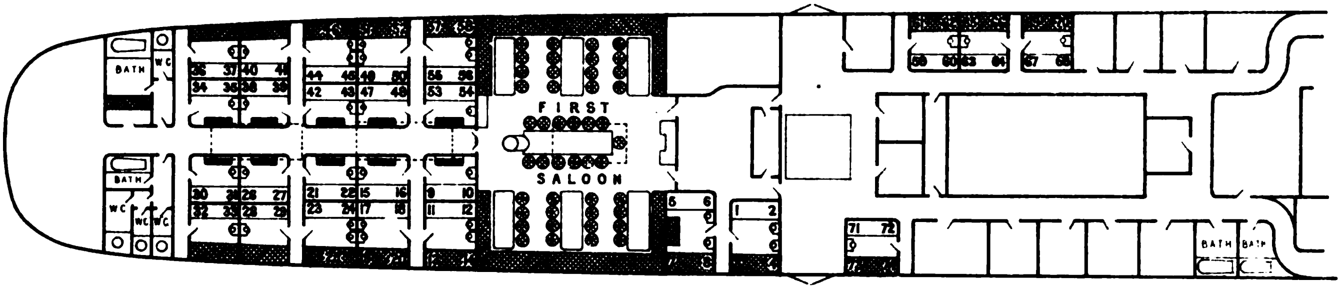

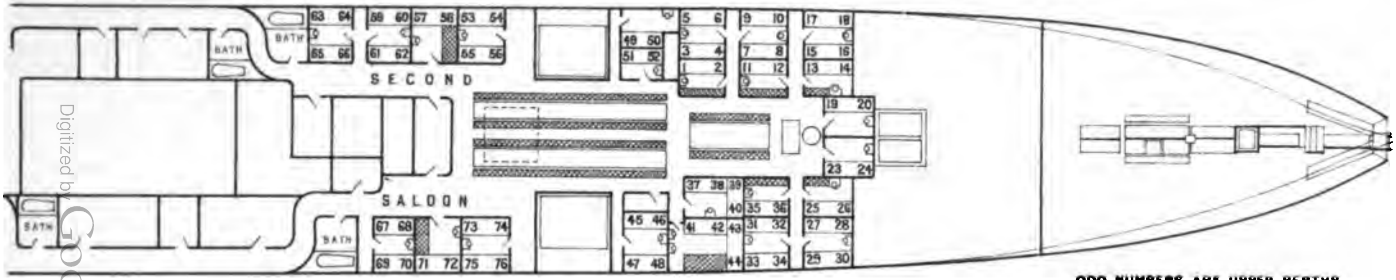

ODD NUMBERS ARE UPPER BERTHS.

men in a gale of wind at night, or in hazy weather on board a ship *at sea*. The observant and considerate passenger will soon discover that in obtaining the necessary observations in foul weather as in fair, and in conducting the vessel in safety from port to port, a never-ceasing watchfulness is required, and that there is but little rest for the "toilers of the sea" in their continuous struggle with the elements. Proficiency in the science and handicraft of navigation can be attained only by incessant practice at sea, and requires both a capacity for taking trouble and unremitting attention. The true secret of the sea is thus known to few, for

> "Only those who brave its dangers,
> Comprehend its mystery."

THE WEATHER AT SEA.

The weather at Sea.—A sea voyage affords a peculiarly favourable opportunity for forming acquaintance with some of the laws of weather. The knowledge thus acquired will be found valuable in shore life. In this exposition we have but called attention to the great amount of useful knowledge that may be acquired on a sea voyage by the study of the matter man sees around him.

The one great function of the meteorologist at sea is the recording of facts. The Marine Department of the British Meteorological Office, under the experienced guidance of Captain Toynbee, has been for years collecting and collating facts from the "weather logs" forwarded from all parts of the ocean. The Office issues a form of log to any who will fill in and return it. These records have already produced many valuable results. The paths of gales and cyclones have been traced, and elaborate wind charts for various portions of the ocean have been published, giving the probable direction of the wind by means of the records of winds actually found blowing in previous years.

The Admiralty publish an atlas containing four Wind Charts of the World, showing for each quarter of the year the probable winds that may be experienced by the sailor as he traverses the various oceans, with isobars, and isotherms, *i.e.*, lines of equal barometric pressure, and lines of equal temperature of the air. These have been carefully compiled from a vast number of reliable observations actually made at sea. There is also a Current Chart of the three oceans drawn upon the same principles. This atlas will be found on board the Orient steamships.

In first facing any science it is of the highest importance to educate the mind down to it, by mastering the important simplicities, and obtaining a true knowlege of the facts upon which the science is based. The information here given is therefore elementary, and taken principally from the practical pamphlets published by the Meteorological Office, known as Barometer Manuals for Seamen and Fishermen. The Hon. Ralph Abercromby's handy work entitled "*Weather*," has also been used, and is strongly recommended to the would-be student of weather science.

At sea, it must never be forgotten that in practice the ship and the wind are always both moving, not only have the motion of the cyclones and anti-cyclones (see pp. 285, 286) in which air travels to be considered, but the course and speed of the ship has also to be taken into account. In the following pages will be found a popular explanation of clouds, the nature of the great tools of the Meteorologist, the Barometer and Thermometer, and of the manner in which the indications of those instruments are used in forming an opinion of weather at sea, to be followed by remarks on Cyclones and Anti-Cyclones; Trade Winds and Monsoons. Concluding with a summary of the weather that will probably be experienced at different times of the year during the passage from England to Australia.

Beaufort Notation, a method adopted in ship's logs and meteorological register to describe the state of the sky:—

b	Blue sky.	**p**	Passing showers.
c	Clouds (detached).	**q**	Squally.
d	Drizzling rain.	**r**	Rain.
f	Foggy.	**s**	Snow.
g	Gloomy.	**t**	Thunder.
h	Hail.	**u**	Ugly (threatening).
l	Lightning.	**v**	Visibility (objects at a distance unusually visible).
m	Misty (hazy).		
o	Overcast.	**w**	Wet (dew).

A bar (-) under any letter augments its signification; thus $\underline{\mathbf{f}}$ very foggy, $\underline{\mathbf{r}}$ heavy rain, $\underline{\underline{\mathbf{r}}}$ heavy and continuing rain.

In observing and noting winds, it is usual to give the *true* and not the magnetic direction. The strength, or technically, the force of the wind is estimated at sea by an arbitrary scale, ranging from 0 to 12; figures which are taken to represent all forces of wind from a dead calm = 0, a moderate breeze = 4, a heavy gale = 8, and violent hurricane = 12.

Colour of Sky, caused chiefly by moisture in the air is a sure indicator of weather. The chief effects of colour are at sunrise and sunset. A few of the more marked signs of weather—useful alike to seaman, farmer, and gardener, are the following:—

Weather clear or cloudy—a rosy sky at sunset presages fine weather; a sickly grey or greenish hue—wind and rain; tawny, or copper clouds—wind; a dark (or Indian) red, rain; a red sky in the morning—bad weather, or much wind (perhaps also rain); a grey sky in the morning and a low dawn—fine weather; a high dawn—wind.

Soft looking or delicate clouds foretell fine weather, with moderate or light breezes; hard-edged oily-looking clouds—wind. A dark, gloomy blue sky is windy; but a light bright blue sky indicates fine weather. Generally, the softer clouds look, the less wind (but perhaps more rain) may be expected; and the harder, more "greasy," rolled, tufted, or ragged—the stronger the coming wind will prove. Also, a bright yellow sky at sunset, presages wind; a pale yellow—wet; orange or copper colour—wind and rain; and thus by the prevalence of red, yellow, green, grey, or other tints, the coming weather may be, when aided by instruments, in some way foretold.

Clouds.—Light, delicate, quiet tints or colours, with soft indefinite forms of clouds, indicate and accompany fine weather; but gaudy or unusual hues, with hard definitely outlined clouds, foretell rain, and probably strong wind.

Small inky-looking clouds foretell rain; light scud clouds driving across heavy masses show wind and rain; but if alone, may indicate wind only—proportionate to their motion.

High *upper* clouds crossing the sun, moon, or stars, in a direction different from that of the lower clouds, or the wind then felt below, foretell a change of wind toward *their* direction.

After fine clear weather, the first signs in a sky of a coming change are usually light streaks, curls, wisps, or mottled patches of white distant cloud, which increase and are followed by an overcasting of murky vapour that grows into cloudiness. This appearance, more or less oily or watery, as wind or rain will prevail, is an infallible sign.

Usually the higher and more distant such clouds seem to be, the more gradual but general, the coming change of weather will prove.

Misty clouds forming, or hanging on heights, show wind and rain coming—if they remain, increase, or descend. If they rise or disperse, the weather will improve, or become fine.

Description.—*Cirrus* cloud consists of streaks, wisps, and fibres, vulgarly called "mare's tails," which may increase in any or all directions. Of all clouds it has the least density, the greatest elevation, and the greatest variety of extent and direction or figure.

It remains for a short time when formed in the lower parts of the atmosphere and near other clouds, and longest when alone in the sky, and at a great height. When streaks of Cirrus run quite across the sky in the direction in which a light wind happens to blow, the wind will probably soon blow hard but remain steady. When the fine threads of the cirrus appear blown or brushed backward at one end, as if by a wind prevailing in these elevated regions, the wind on the surface will ultimately veer round to that point.

Cumulus, a cloud in dense convex heaps in rounded forms definitely terminated above; the lower surface remains roughly horizontal. Cumulus is never seen as such overhead, but only in the horizon, or at a moderate height above it.

When of moderate height and size, of well-defined curved outline, and appear only during the heat of the day, they indicate a continuance of fair weather. But when they increase with great rapidity, sink down to the lower parts of the atmosphere, and do not disappear towards evening, *rain* may be expected.

Stratus is a continuous extended sheet of cloud, increasing from below upwards. It is the lowest sort of cloud. It generally forms about sunset, grows denser during the night, and disappears about sunrise.

Cirro-Cumulus is composed of well-defined, small, rounded masses lying near each other, and quite separated by intervals of sky. It is commonly known as a "*mackerel sky*," it occurs frequently in summer, and is attendant on warm and dry weather.

Cirro-Stratus.—This cloud partakes partly of the characteristics of the Cirrus and Stratus. In distinguishing it, attention must be paid, not so much to the form, which is very variable, but to the structure, which is dense in the middle and thin towards the edges. It is a precursor of storms; and from its greater or less abundance and permanence, it gives some indication of the time when the storm may be expected.

Cumulo-Stratus.—This cloud is formed by the Cirro-Stratus blending with the Cumulus, either among its piled up heaps, or spreading underneath its base as a horizontal layer of vapour.

Cumulo-Cirro-Stratus or Nimbus.—This is the *rain cloud.* At a considerable height a sheet of Cirro-Stratus cloud is spread out, under which Cumulus clouds drift from windward; these rapidly increasing unite at all points, forming one continuous mass, from which rain falls.

Scud.—When a rain cloud is seen approaching at a distance, Cirri appear to shoot out from its top in all directions, and it has been observed that the more copious the rainfall, the greater is the number of Cirri thrown out from the cloud.

Rainbows:—

"A rainbow in the morning—
Sailors take warning;
A rainbow at night
Is the sailor's delight."

Morning rainbows indicate the advance of rain cloud from the west when it is clear in the east; and the fall of rain at the time of day when the temperature should be rising, is regarded as a prognostic of a change to wet stormy weather.

On the contrary, the conditions under which a rainbow can appear in the evening are: the passing of the rain cloud to the east, and a clearing up in the west at the time of day when the temperature has begun to fall, thus indicating a change from wet to dry weather.

"The evening grey and the morning red,
Put on your hat, or you'll wet your head."

Squalls.—Generally squalls are preceded, or accompanied, or followed by clouds; but the very dangerous "white squall" (of the West Indies and other regions) is indicated by a rushing sound, and by white wave crests.

The ordinary squall clouds are heavy and black and in the form of an arch.

A squall cloud that can be seen through or under is not likely to bring, or be accompanied by, so much wind as a dark continued cloud extending beyond the horizon.

The rapid or slow rise of a small cloud—its more or less disturbed look—that is, whether its body is much agitated, and changing form continually, with broken clouds, or scud, flying about—or whether the mass of cloud is shapeless or nearly quiet, though floating onwards across the sky—foretells more or less wind accordingly.

In some of the saws about wind and weather there is so much truth that though trite and simple, their insertion here can do no harm.

Adverting to the barometer:—

> "When rise begins, after low,
> Squalls expect and clear blow."

Or—

> "First rise, after low,
> Indicates a stronger blow."

Also—

> "Long foretold, long last;
> Short notice, soon past."

To which may be added: In squalls—

> "When the rain's before the wind,
> Halliards, sheets, and braces mind."

And—

> "When the wind's before the rain,
> Soon you may make sail again."

Also generally speaking—

> "When the glass falls low,
> Prepare for a blow;
> When it rises high,
> Let all your kites fly."

The Chief Instruments used for obtaining indications of probable changes in weather are the barometer and the thermometer. Of these the barometer is the more important, and it is, therefore, frequently called a "weather glass."

The Barometer is a familiar instrument, but few understand all that it tells us. The general opinion is that when the mercury rises in the tube there will be less wind or rain; when it falls that there will be more wind or rain, and that when it remains steadily high a period of fine dry weather is probable; while when it remains low the weather will continue wet and unsettled.

These interpretations are usually correct, but sometimes wrong, as will be shown in the subsequent pages.

The barometer in its simplest form consists of a straight glass tube a little less than three feet long, closed at one end. This being filled quite full of mercury, the open end is temporarily covered by the finger, and the tube turned over with the closed end upwards, the open end is then plunged into a cup or cistern also filled with mercury, and the finger is removed without allowing any air to get into the tube. The mercury in such a tube will sink when the finger is removed until the top of the column stands at a height of about thirty inches above the level of the mercury in the cistern.

The space in the tube above the top of the column of mercury contains no air, and is called a vacuum.

The mercury in the tube of a barometer rises when the whole pressure or weight of the air becomes greater, falls when it becomes less, and remains at rest when the pressure or weight is unchanged.

Now, the weight of mercury is such that a column thirty inches in height, in the tube of a barometer, will press on the mercury in the cistern, and so endeavour to fall in the tube, with nearly the same force as the air outside the tube presses on the free surface of the mercury, and so endeavours to hold up the mercury in the tube, or, in other words, the thirty inches of mercury will nearly balance the pressure of the atmosphere, which is about fifteen pounds on the square inch.

The words fair, change, rain, &c., which are often printed on the scales of barometers are of little value. The changes of level of the mercury are greater in winter than in summer, and the height of the column is likewise dependent on elevation above the sea level and other circumstances, so that the same scale of words could not suit all seasons or all places, even if the level of the mercury alone indicated the condition of the weather, which is very far from being the case. It is not to the mere height of the mercury in a barometer on a particular day that we are to look in order to judge of the weather, but to the fact of its having risen or fallen, or remained steady since the day before or the last time it was set, and even this alone will not supply conclusive evidence, as will be explained subsequently.

In both temperate zones, the mercury is found to rise and fall, or to range through a space of nearly three inches, measuring from the lowest position observed on some extraordinary occasions to the highest observed on others, namely, between thirty inches and nine-tenths (30·9), and twenty-eight inches (28·0) or even a little lower. The usual range is from 30·5 inches to about 29·0 inches. In the torrid zone, or near the equator, the range is much less, being only a few tenths of an inch, except in very severe storms or hurricanes, in which the level sometimes falls as low as 27·0 inches.

A sliding scale, called a Vernier (from its inventor, Captain Vernier, in 1631), is provided for most barometers, to assist in measuring the height of the column of mercury. It is invariably used in making accurate observations. In some instruments it is so constructed as to divide the tenths into ten parts each, or into hundredths of an inch, in others it allows of readings being taken to still greater minuteness.

The Aneroid.—In the aneroid, atmospherical pressure is measured by its effects in altering the shape of a small, hermetically sealed, metallic box, from which almost all the air has been withdrawn, and which is kept from collapsing by a spring. When atmospherical pressure rises above the amount which was recorded when the instrument was made, the top is forced inwards, and *vice versâ*, when pressure falls below that amount the top is forced outwards by the spring. These motions are transferred by a system of levers and springs to a hand, which moves on a dial like that of a wheel barometer.

The aneroid is of great value during hurricanes or very bad weather, especially at night, for it can be registered with great facility, and being portable, may be watched constantly, when the marine barometer may not be accessible; moreover its variations occur simultaneously with their causes, showing minute changes, unobservable in the best constructed marine barometers, owing to the pumping of the quicksilver, when the motion of the ship is violent; nevertheless, it should, when opportunity offers, be compared with a good mercurial barometer.

Thermometer.—This instrument shows heat and cold, but is not affected by changes of the pressure of the air. It consists of a glass tube of very small bore, closed at one end, and united at the other to a bulb, which is filled with mercury. Almost all substances swell or expand when they are heated, and shrink or contract when they are cooled. When the thermometer is heated the mercury in the bulb expands and can no longer be contained in the bulb. Its excess, in the form of a thin thread of mercury, rises in the tube. When the instrument is cooled the mercury shrinks, and the thin thread becomes shorter, as it subsides towards the bulb. Thus, then, by observing the length of the thread of mercury in the tube, as measured by the graduation at its side, the thermometer shows the temperature at the time.

The indications of a thermometer are recorded in degrees, (°) not in inches like the barometer. There are two fixed points on the scale by which thermometers are graduated,—viz., that at which ice melts and that at which water boils. In the thermometers in use in England, the distance between these two points is divided into 180 parts, or degrees. The point at which ice melts, measured on this scale, is thirty-two degrees (32°), and that at which water boils, when the barometer reading is thirty inches, is two hundred and twelve degrees (212°).*

The Hygrometer.—This instrument measures the dampness of the air. There are several kinds of hygrometers, but the easiest to make and to manage consists of a pair of thermometers placed near each other. If one of these be fitted with a piece of thin linen fastened tightly round the bulb, and this coating be kept damp by means of a few threads of darning cotton or lamp wick, which are tied loosely round the stem so as to touch the linen, and have their lower ends dipping into a cup of water placed close to the thermometer, it will usually show a temperature lower than that shown by the other thermometer which is near it, the depression of the wet bulb being dependent on the degrees of dryness of the air.

A thermometer fitted in the manner described above is called a wet bulb thermometer to distinguish it from an ordinary thermometer which has its bulb dry.

The wet bulb thermometer is cooled by evaporation. When the atmosphere is very damp or moist, during or just before rain or when fog is prevalent or dew is forming, there is little or no evaporation, and the two thermometers read very nearly alike, but at other times the wet bulb reads lower than the dry, because the water dries off from the linen coating, and in order to dry off or to be evaporated it requires heat, which it takes from the thermometer itself. The evaporation is greater as the air is drier, and accordingly the difference in readings between the dry and the wet bulb is then also greater. The difference sometimes amounts to ten or fifteen degrees in England, and to twenty or even more in other parts of the world.

Changes in weather almost always give some warning of their coming, and the instruments are usually affected before the wind actually begins to blow or the rain to fall; thus the instruments may be said to enable us to feel the pulse of the atmosphere. We have already seen how the appearance of the sky will aid us in forming an opinion as to probable weather. But the length of time which passes between the first indication of a change of weather and its actual setting in, is not always the same.

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* This graduation is the earliest adopted, namely, by Fahrenheit, at the beginning of the eighteenth century. There are other forms of graduation, Centigrade, in which the freezing point, the 32° of Fahrenheit, counts as 0°, and the boiling point as 100°, and Réaumur, in which the freezing point is 0°, and the boiling point 80°. The different scales are easily convertible by tables. There is one for this purpose in Whitaker's Almanac. Fahrenheit's thermometer is generally used in this country, and Réaumur's and the Centigrade abroad. There are disadvantages in the scales of Réaumur and Centigrade, as the length of each degree is much greater than in Fahrenheit, and not so easily nor accurately read when the mercury is between two lines of division; and the temperatures requiring to be registered being often below the freezing of water, are always obliged to be expressed by negative signs.

The barometer, feeling the pressure of the air, shows at once when that pressure is changing in amount. When the pressure is unequal over a tract of country, the air begins to move, to re-establish uniformity of pressure, and thus *wind* is caused. Thence the barometer by its changes, shows pretty accurately when wind or change of wind may be expected. A change of weather comes almost always with a change of wind, and because landsmen generally, particularly farmers and gardeners, care more about rain or snow than about wind, these classes have got into the habit of looking at the barometer in order to see whether the weather is going to be wet or dry.

Used without discretion, the barometer is almost as likely to mislead the person consulting it as to guide him aright. The barometer has but two motions, rising and falling, by which to indicate all changes of weather; and any conclusions drawn from its movements require to be checked by observations of temperature, moisture of the air, the present and previous direction and force of wind, and the state of the sky, before a correct opinion can be formed as to what may be expected.

Temperature, subject to the changes that follow the seasons of the year, or the time of day, is influenced in the first instance, by the direction of the wind, which may come from hot or cold regions, and in the second, by the height of the barometer, for the higher the barometer the lower is the temperature of all winds except in hot summer weather.

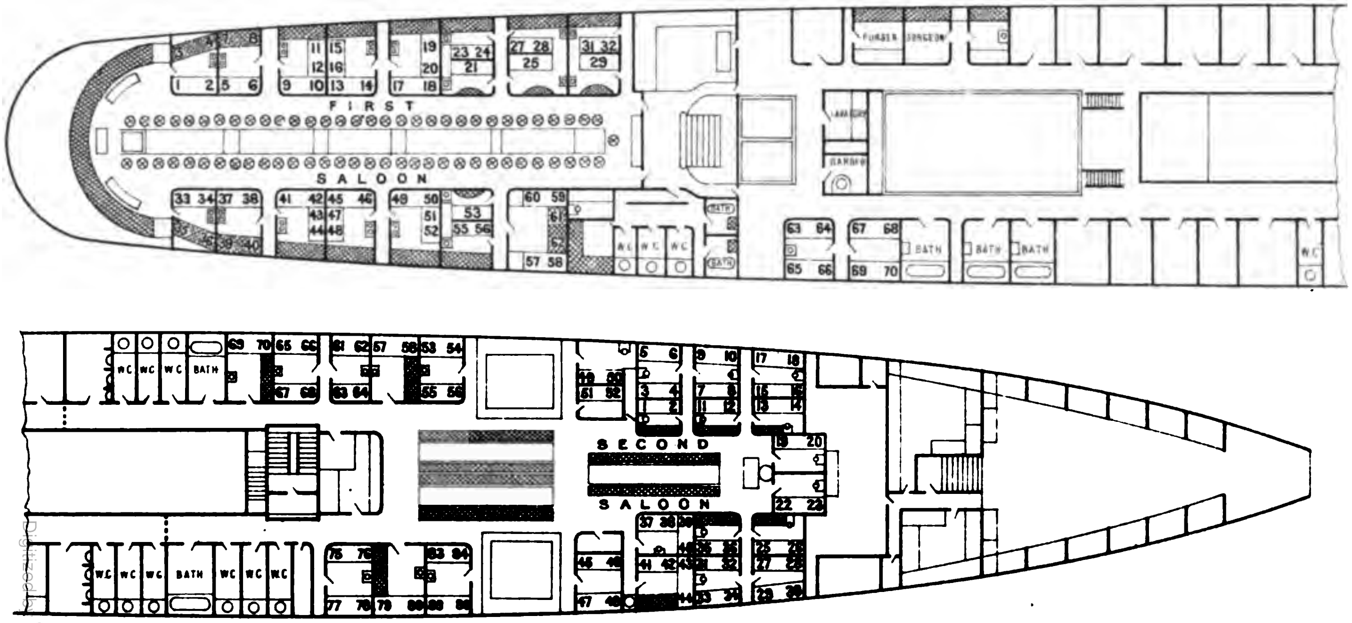
The dampness of the air, the amount of cloud, and the chance of rain, as well as its amount, are all connected to some extent with atmospheric pressure, and, roughly speaking, they are all great when the barometer is low, and small when the barometer is high.

Isobaric Charts.—Barometric observations are entered on charts; lines are then drawn through all the places in which the pressure is the same for each successive tenth of an inch.

The accompanying charts show the mean barometer pressure between England and Australia for the months of January and July respectively, according to the best data available. On these charts lines are drawn showing where certain barometric pressures, at intervals of each tenth of an inch, indicated by the figures upon them, have been observed. These lines are termed Isobaric lines, or isobars, because they pass over places having equal barometrical pressure.

From these charts it will be seen that, speaking generally, in both hemispheres, in the cold season or winter, *i.e.*, in January in the northern, July in the southern, the barometer is highest over the land, which is then colder than the sea; and lowest

S. S. "GARONNE."



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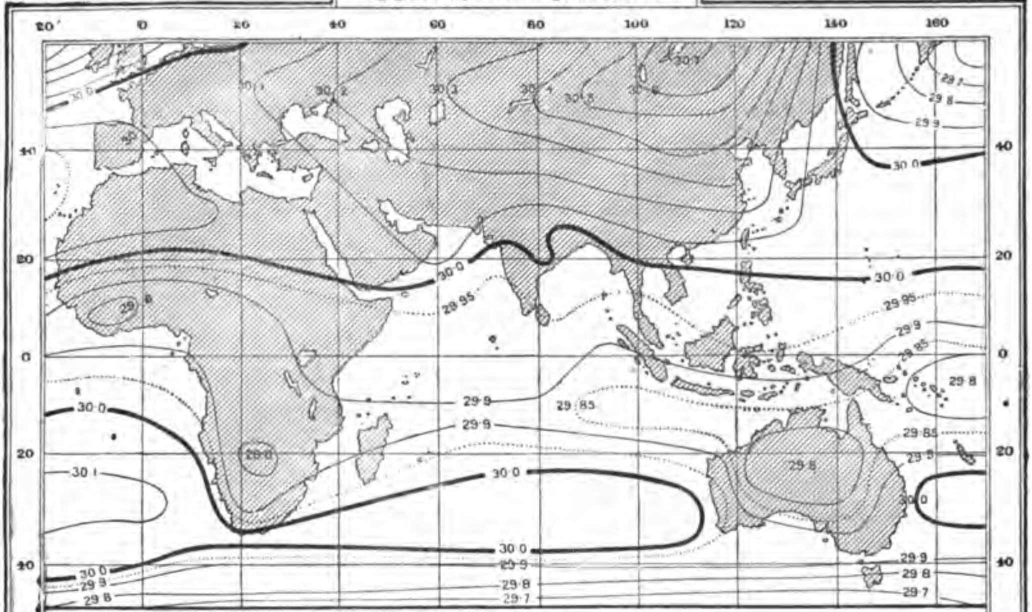
WEATHER AT SEA.

ISOBARS FOR JANUARY.



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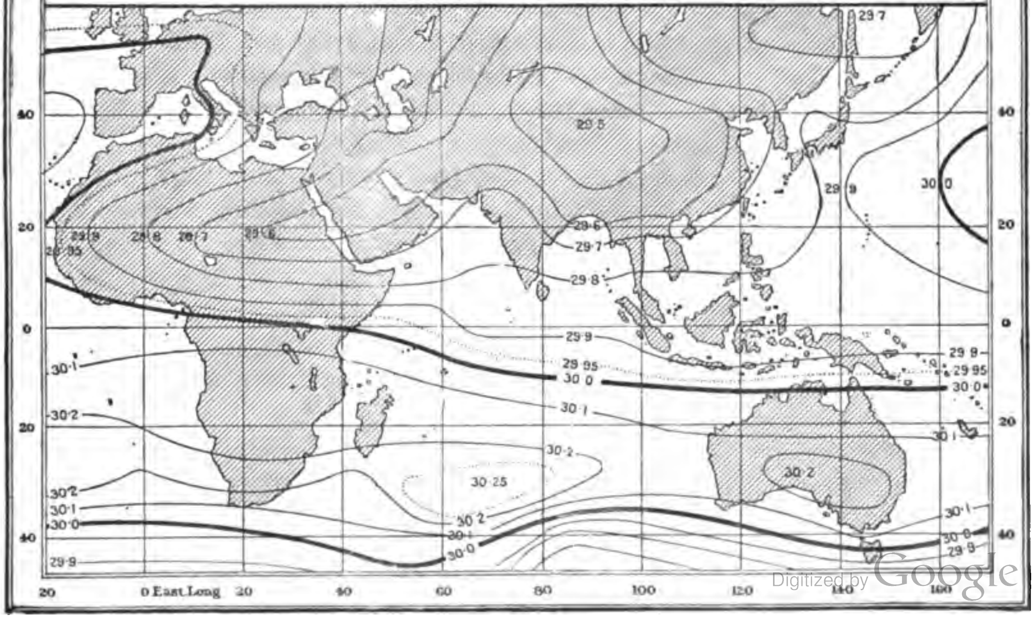


over the sea, which is then warmer than the land. In the summer the barometer is lowest over the great continents, which are then relatively hot, and highest over the sea, which is then relatively cool. The summer and winter occurring at opposite times of the year in the north and south hemispheres, the greatest development of high pressure in the northern hemisphere is seen in the January chart, and in the southern hemisphere in the July chart, and *vice versâ*.

Over the equator and between the tropics, where the temperature is always comparatively high, the barometer is low relatively to the neighbouring zones just beyond the tropics, where the temperature is relatively low, and the barometer is high.

The variations of pressure which thus arise over certain tracts of land and sea, are the origin both of permanent winds, such as the Trades, and of periodical winds, such as the Monsoons, those last named following a corresponding periodical change of pressure over the tracts where they are established.

In the accompanying charts the difference in the height of the barometer in the Indian ocean in January and July is very marked. The Isobar of 30·0 in. being found in about latitude 15° N. in January, and in about latitude 10° S. in July. On the parallel of 40° N. in Siberia, the barometer is one inch higher in January than it is in July. On the other hand the barometer in Australia is four-tenths of an inch higher in July than it is in January.

Buys Ballot's Law.—The barometer charts illustrate the law discovered by Professor Buys Ballot, of Utrecht, and first announced in Europe about twenty years ago. From this law we can tell what wind may blow, at a group of adjacent places, if we know the readings of the barometer.

The law is stated in the following terms:—

"Stand with your back to the wind, and the barometer will be lower on your left hand than on your right."

This is the law for the northern hemisphere, for the southern hemisphere the words "left" and "right" should be interchanged.

Thus the wind will be, or may be expected to be, in the northern hemisphere:—

Easterly when the pressure is highest in the north, lowest in the south.
Southerly when highest in east, lowest in west.
Westerly when highest in south, lowest in north.
Northerly when highest in west, lowest in east.

Next as to the velocity of the wind. This depends, at least in a great measure, on the amount of the difference of barometrical readings over a given distance.

Besides these rules for the relation between the wind and the height of the barometer, there is another about the way in which the wind changes, which is very important. It is well known to every sailor, and is contained in the following couplet:—

> **When the wind shifts against the sun,**
> **Trust it not, for back it will run."**

The wind usually shifts clockwise, *with watch hands*, *i.e.*, from left to right in front of you. A change in this direction is called *veering*.

Thus an east wind shifts to west through south-east, south and south-west, and a west wind shifts to east through north-west, north, and north-east.

If the wind shifts in the opposite way, viz., from west to south-west, south, and south-east, the change is called *backing*, and it generally indicates that a new storm is approaching, The reasons for this will be explained further on.

However, slight shifts of winds do not follow this rule exactly, thus for instance, the wind often shifts from south-west to south and back again.

Cyclonic Systems.—In addition to the general charts showing the mean barometric pressure for a period of time over a large extent of the earth's surface smaller charts of localities such as the British Isles are issued that show daily changes.

On one of these charts, as in the annexed Fig. 1., some of the Isobars may be seen in the form of rings, which are generally irregular, oval, or egg-shaped. If the innermost ring is very small, and there are several others packed more or less closely round it, the differences of pressure at neighbouring places will be large, and there will probably be a storm blowing where the rings are closest. In such a case, the barometrical reading represented by the innermost isobar will be the lowest on the map, and round that point the wind will blow, moving *against watch hands* or counter clockwise as shown in the diagram, Fig. 1.

Such a distribution of barometer readings with its accompanying winds is called a "cyclonic system," a "cyclone," or a depression. The term cyclone is from a Greek word meaning to whirl round in a circle, as the wind appears to blow in a circle. The word depression refers to the fact that the barometer is low, the level of its column being depressed within the area affected by the system.

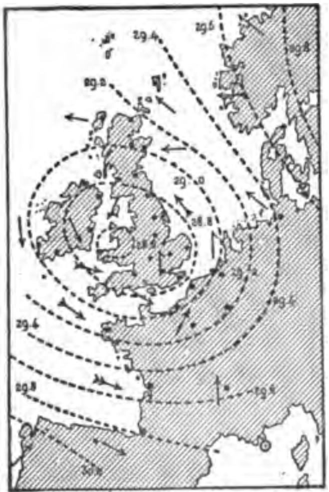


FIG I. (CYCLONIC SYSTEM)

If the barometer reading, as in Fig. 2., represented by the innermost isobar is the highest on the map, the system is called "anti-cyclonic," or an "anti-cyclone" as being the opposite of a cyclone. See annexed Fig. 2.

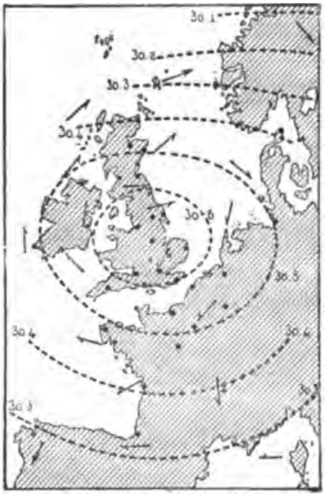


FIG 2. (ANTICYCLONIC SYSTEM)

In such a case the isobars always lie further apart than in the cyclonic systems; the differences of pressure are therefore slight, and the winds light. The winds circulate with *watch hands* or clockwise (as shown in the diagram), and therefore in the opposite way to what takes place in cyclones.

Anti-cyclones bring with them dry weather and clear skies. In winter they are usually accompanied by frosts, and frequently produce local fogs, but no clouds. In summer they bring fine weather, as there are no clouds to stop the sun's rays.

The only other points we shall mention are that cyclonic systems usually move comparatively rapidly over the country, in general from some westerly point, never, or at least hardly ever, from an easterly point. Anti-cyclones move very slowly.

This fact of the motion of storms explains the law of "veering" and "backing" wind, which has already been stated. On the right-hand side of the track of a cyclonic system, that is on the southern side over our islands, the wind veers from S.E. through S. to W., and N.W., as the system passes by a station. On the left-hand side, or on the northern side over our area, the wind backs from S.E. to E. through N.E. to N.

In general whenever the barometer readings change slowly, there is very little danger of a storm, but when they change rapidly, there may be a sudden squall, or serious gale.

When the barometer at any place rises very high (above 30·5 inches), and continues so for some days, it will be due to the existence of an anti-cyclonic system, the wind will be light and the weather probably dry with local fogs, and in winter with frosts. When the barometer is very low (below 29·0 inches) and continues so, there may be calm and even dry weather for a short time, at the centre of a large cyclonic disturbance, but there is great danger of a serious storm, because there will be reason to expect the air from the region of higher pressure without to flow with violence into the district where the readings are low.

If the barometer rises gradually from a low level, the weather will usually become drier, and if it has been blowing hard, the wind will become lighter, or perhaps die away into a calm. If the barometer falls gradually from a high level, the weather will usually become damper, and there will be an increased probability of rain, though there will not be much wind as long as the barometer changes slowly.

A sudden rise of the barometer after it has been steady for some time, is very nearly as bad a sign as a sudden fall, because it shows that the atmosphere is in a disturbed state. In an ordinary gale, the wind often blows hardest when the barometer is just beginning to rise, directly after having been very low. The direction of such gusts is generally from W.N.W. or N.W. direction in the British Islands.

With a rapid rise of the barometer in disturbed weather, severe squalls are common, though the weather generally improves quickly. Frequently, however, from the tendency of a succession of cyclonic disturbances to follow one another, such a rise is followed by as rapid a fall, when a ridge of high barometer readings passes away, and a new depression advances, and in winter beautiful weather and a rime frost are often experienced as the ridge is passing. This accounts for the saying that, a rime frost is a sign of bad weather. Such fine days between two storms are called "pet days" in some parts.

Tropical Cyclones.—But the cyclone theory is of most direct importance to the seaman when in those regions which record tells us are peculiarly liable to abnormally violent cyclonic disturbances. These are the tropical zones, where the forces both of the earth's rotation and the sun's heat are most effective. These storms occur generally in the hot seasons when the seas in which they prevail come under the sun. They may be described as gales of great violence, turning round and rolling forward at the same time. The average rate of the progressive movement of their centres is usually between 200 and 300 miles in the twenty-four hours. They travel westward at first, then curve round towards the poles of the hemisphere they may be crossing, finally moving to the north-east in north latitudes and to the south-east in south latitudes. The tracks of these storm centres are shown upon the Admiralty Wind Charts.

Warned always by his barometer, and generally by the threatening aspect of sky, and troubled agitation of sea, the captain will know that the centre of the coming storm, or the region of the lowest barometer is probably about ten points of the compass to his right, as he stands facing the wind in the beginning of the storm, in the northern latitudes; and ten points to the left if in southern latitudes. But he has further to find out on which side of the storm's path the vessel lies. This important point is to be discovered by watching the way the wind changes or veers. Thus when north of the equator the wind will change round the compass clockwise, or in the same direction as the hands of a watch move, if the centre of the cyclone be passing to the right hand of an observer who is facing the direction from whence the storm is coming. The wind will change counter clockwise, or contrary to the movement of the hands of a watch, if the centre be passing the same observer's left hand. In the southern hemisphere these conditions are reversed.

In using the above rules it is essential that the ship's position be *as nearly as possible stationary;* for if a ship continues her course the wind may shift in a direction exactly opposite to that which would have been observed had the vessel been stationary, and an erroneous conclusion as to her position in the storm would be drawn. The advisibility of heaving-to on the first approach of a hurricane, cannot therefore be too strongly urged.

The approximate position of storm and probable course of the centre having been thus determined:—

If to the right of the storm's path—

In the Northern Hemisphere—Carry-on, or heave-to on *starboard* tack.
In the Southern Hemisphere—Run or heave-to on *starboard* tack.

If to the left of the storm's path—

In the Northern Hemisphere—Run, or heave-to on *port* tack
In the Southern Hemisphere—Carry-on, or heave-to on *port* tack.

As a general rule, it is advisable to HEAVE THE VESSEL TO ON THE TACK ON WHICH SHE WOULD COME UP AS THE WIND SHIFTS TOWARDS THE STERN:

If, with the ship hove to, the wind continues steady in the same direction, increasing in violence with a rapidly falling barometer, it may be presumed that the ship lies in the direct path of the storm's centre, and it will be necessary to run before the wind, keeping the wind at all hazards two or three points on the starboard quarter in the Northern Hemisphere, or on the port quarter in the Southern Hemisphere.

If the vessel be unable, from want of sea-room, to run, her position becomes one of great danger, and every precaution should be taken to prepare for the passage of the centre over the ship; for the steady wind will be succeeded by a short interval of calm, to be followed by a sudden and most violent burst of wind from the opposite point of the compass to that from which the wind has been blowing. After the calm the barometer will commence slowly to rise.

Speaking in the most general terms, the air flows *out from* the region of local greatest cold, and *into* the region of local greatest heat, because cold air is heavier than warm air, but it is modified in its flow by various agencies, among which the rotation of the earth on its axis, which imparts an eastward motion to the whole atmosphere, is the most important. It is to this cause that is due the deflection in the northern hemisphere of northerly winds to an apparent easterly course, and of southerly winds to an apparent westerly course; and by the combination of these tendencies the peculiar directions of the cyclonic and anti-cyclonic winds are also produced.

Trade Winds.—The general theory of the wind depends on two factors, heat and the earth's motion. The air near the earth's equator, being heated and becoming lighter gives occasion for a perennial inrush of heavier air from colder regions.

The heat of the equatorial districts causes the air there to become light and therefore to rise, while the air from the poles continually pressing towards the equator from the colder regions, forms, through the motion of the earth, the winds from the north-east or south-east, known as the N.E. and S.E. trades. On the other hand, the air rising from the equator, where it has acquired the velocity of the earth's surface in that region, moves towards the poles, and, descending to the sea, becomes the westerly wind of the temperate zones. When the air drawn in the northern hemisphere southward towards the equator meets the air carried northward from the southern hemisphere toward the same place, these two horizontal currents clash, counterbalance each other, lose their motion, and cause the calms, squalls, and variable winds known as the equatorial doldrums. Similarly, the hot air that rises from the equator, in descending to the surface of the earth, between the latitudes of 30° and 40°, as a south-west or north-west wind, meets and checks the motion of the cold air, rushing from north or south poles towards the equator, and thus forms, in both hemispheres, belts of calm and variable winds, known as the Calms of Cancer in the northern, and Calms of Capricorn in the southern.

Such is the general idea of the motion of our atmosphere; but there are endless local perturbations, the most marked being the "monsoons" or season winds of the Indian Ocean. The alteration in the temperature of the surface of the earth affects the atmosphere in a considerable manner. The sandy plain becomes more readily heated than the wooded hillside. The land and sea breezes of the tropics arise from the difference in receptivity of heat between land and water. Water is less subject to sudden changes of temperature than land, but at sea there are distinct currents of cold and hot water. The Gulf Stream of the North Atlantic, and the Agulhas Stream off the coast of South Africa, bring great masses of water, warmed in the tropics, into the colder polar seas. The air is not only set in motion by these causes, but is also changed in character.

Monsoons.—The wind systems of the Indian Ocean are much more complicated than those of either the Atlantic or Pacific. In the Indian Ocean, from the shores of

Asia to the parallel of 10° S., in place of the north-east and south-east trades, with the intervening belt of calms which prevail in these latitudes in other parts of the world; periodical winds termed "monsoons" will be found, blowing from the north-east, south-west, and north-west, according to the season of the year.

In the Arabian Sea, Bay of Bengal, and China Seas, and as far south as the equator, a pleasant breeze like a trade wind, from the north-east and north, prevails from November to March. This is known as the "north-east monsoon," and brings fair weather. This monsoon blows with greatest force in the China Sea.

From the equator to the parallel of 10° S., between the same months, the prevailing wind is from the north-west, generally light and uncertain, accompanied with squalls, heavy rain, and chequered by periods of calm. This is termed the north-west, or middle monsoon. To southward of lat. 10° S., the south-east trade will be found.

Between May and September in the same regions an entire change takes place, the winds now blowing fiercely from the south-west with rain and gales. In June and July it is a continuous storm in the Arabian Sea and Bay of Bengal. This is called the south-west monsoon, and is the bad season of the year. The north-west wind, south of the equator is replaced by the south-east trade, which extends nearly to the line, but falls light with frequent calms to the northward of 5° S., and between Sumatra and the meridian of Mauritius. April and October are the months of change during which the weather is uncertain and squally with frequent calms.

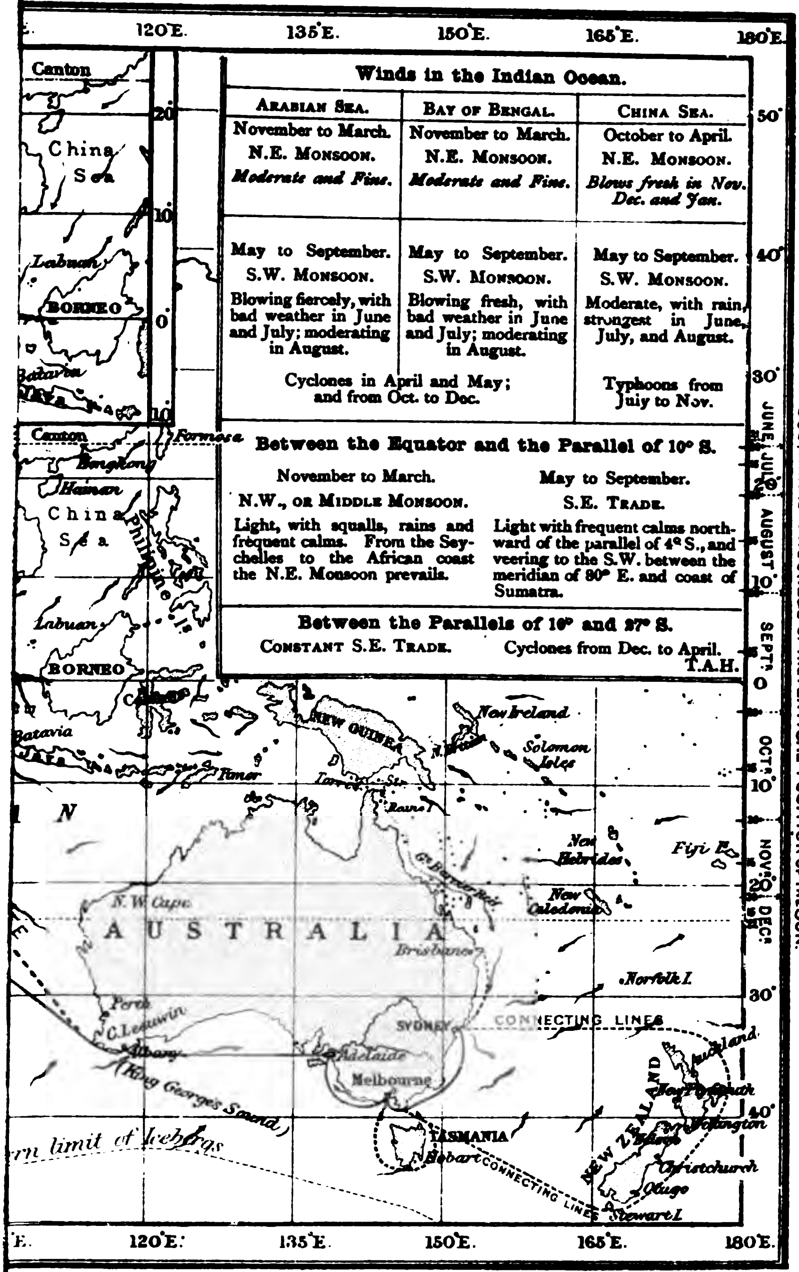
The table on the Track Chart, gives a comprehensive view of the course and nature of the monsoons in the several regions of the Indian Ocean.

The Currents of the Indian Ocean run generally with the monsoons. In the N.E. monsoon the current in the Arabian Sea runs to the southward along the Malabar coast, and then sets to the south-westward, its velocity depending on the force of the wind. On reaching the African shore, this current runs along the coast at the rate of from one and a half to two and a half miles an hour, meeting, in about latitude 4° S., the northerly streams from *Zanzibar*; both streams then turn to the eastward, setting right across the Indian Ocean between the equator and the parallel of 70° S.

There is a general set of from one to two miles an hour to S.W. along the S.E. coast of Arabia, and into the Gulf of Aden.

In the S.W. monsoon the currents in the Arabian Sea are regular in direction, their velocity depending much on the force of wind and local circumstances. The general course of the current in the middle of the sea is about E., inclining to S.E.

CURRENT CHART .



Winds in the Indian Ocean.

ARABIAN SEA.	BAY OF BENGAL.	CHINA SEA.
November to March. N.E. MONSOON. *Moderate and Fine.*	November to March. N.E. MONSOON. *Moderate and Fine.*	October to April. N.E. MONSOON. *Blows fresh in Nov. Dec. and Jan.*
May to September. S.W. MONSOON. Blowing fiercely, with bad weather in June and July; moderating in August.	May to September. S.W. MONSOON. Blowing fresh, with bad weather in June and July; moderating in August.	May to September. S.W. MONSOON. Moderate, with rain, strongest in June, July, and August.
Cyclones in April and May; and from Oct. to Dec.		Typhoons from July to Nov.

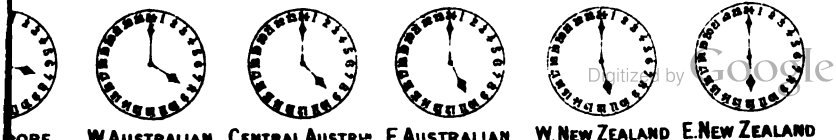
Between the Equator and the Parallel of 10° S.

November to March.	May to September.
N.W., OR MIDDLE MONSOON.	S.E. TRADE.
Light, with squalls, rains and frequent calms. From the Seychelles to the African coast the N.E. Monsoon prevails.	Light with frequent calms northward of the parallel of 4° S., and veering to the S.W. between the meridian of 80° E. and coast of Sumatra.

Between the Parallels of 10° and 27° S.

CONSTANT S.E. TRADE. Cyclones from Dec. to April.

T.A.H.



as it nears the western coast of India; its velocity varies from half a mile to two miles per hour.

On the eastern coast of Africa the current in the S.W. monsoon sets from Zanzibar along the coast to the N.N.E. at a velocity of two to four miles per hour, passes through the channel between Sokótra and the N.E. point of Africa at a rate of one and a half to two miles per hour, pursuing a course northerly and easterly, until it impinges on the Arabian coast about Ras Kosair, whence it takes a north-easterly course along that coast to Rás-al-Hadd, at a velocity of a half to one and a half miles per hour.

WINDS AND WEATHER BETWEEN ENGLAND AND AUSTRALIA.

Bay of Biscay.—The prevailing winds in the Bay of Biscay, throughout the year, are those from N.W., West, and S.W. Severe gales are frequently experienced from the same quarters, often attended with violent squalls, rain, hail, and thick weather. These gales blowing over the full extent of the North Atlantic cause a mountainous sea in the bay, and at the mouth of the English Channel.

No fixed rule appears applicable to these gales; they more frequently, however, commence in the south-west quarter and blow themselves out in the north-west.

On the north-west coast of Spain, as well as on the west of Portugal, the westerly gales are felt in full force. In these parts, if a calm with a westerly swell succeeds a south-west wind it is considered a forerunner of a westerly gale: they become less frequent and violent as the latitude of Gibraltar is approached.

Easterly winds occur at intervals throughout the year, but are most common about the period of the equinoxes, when they often increase to gales of long continuance, generally attended with clear weather and a high barometer. February and March are the months in which these winds are strongest and most frequent.

In June, July, and August, fine weather and light southerly and south-westerly winds are met with in the Bay of Biscay, but this time of the year is by no means exempt from both easterly or westerly gales. Fogs prevail in October and November, and are notably dense: they seldom last longer than twenty-four hours; a change of wind causes them to disperse.

Rain is most common in December, January, and February, and at the equinoxes. Although the weather generally improves after passing Cape St. Vincent, Bay of Biscay weather may still be met with between November and March. In other seasons the westerly winds are usually moderate, with fine weather, although the sky may be overcast.

Strait of Gibraltar.—Two winds prevail in the Strait of Gibraltar, they are those from east and west, and are known as the Levante and Ponente. There have been years when easterly winds have greatly prevailed in the Strait, sailing vessels then being rarely detained in their passage westward. There have also been years of westerly winds when the bays and anchorages along the Spanish coast in the vicinity of the Strait have been crowded with sailing vessels waiting a spell of easterly wind to clear the Strait; instances have been known of vessels being detained from one to two months unable to clear this short distance.

The Levanter gives timely warning of its approach, especially in Gibraltar Bay and Ceuta. An abundance of dew, a mist over the land, with clouds hanging in dense masses over Gibraltar and Ape's Hill are almost certain indications; and these continue while the east wind lasts. Off Cadiz it is well known when a Levanter is blowing in the Strait, by the whitish clouds in the form of strips of cotton which hang about the summits of the neighbouring mountains.

When the summits of Gibraltar and Ape's Hill become clear and conspicuous it is a tolerably sure sign of the approach of westerly wind; the atmosphere becomes dry, and the lassitude experienced in an easterly wind is sensibly less. Both easterly and westerly winds are also foretold by swelling waves from eastward or westward.

The barometer is a good guide between November and March. When it falls wind or rain may be expected. With winds from N.N.W. to East it is generally high and keeps so even when it rains. But as soon as the wind has any tendency to the southward it falls; thus a rising barometer indicates a northerly or easterly wind, and a falling barometer the contrary. A considerable fall indicates either bad weather from south-west or south-east, or heavy rain.

Mediterranean.—In the western basin of the Mediterranean November is often a pleasant month, in December to March S.W. winds, blowing from the Atlantic, enter the Mediterranean with their full force, in passing over Africa they moderate slightly. These winds always bring bad weather and heavy rains, improving if they veer to the westward, and if they *veer* to north-west the atmosphere clears, wind moderates, and the weather becomes fine; but if the wind *backs* to the S.W. a return of bad weather, exceeding that already experienced may be expected.

Between May and October easterly winds prevail with land and sea breezes if in with the coast. Calms are frequent, with squalls and thunder storms at the equinoxes.

The West Coast of Italy is greatly sheltered by the islands of Corsica and

Sardinia; in the space between, the weather is generally fine with light variable easterly breezes. On the coast, land and sea breezes prevail.

Westerly winds are seldom felt except when westerly gales are blowing west of Sardinia. Generally when these gales are blowing, south-easterly winds are met eastward of the island. Westerly gales are rarely felt at Naples. On leaving Sicily and crossing the mouth of the Adriatic strong winds blowing in or out of the Adriatic will generally be experienced between November and April. Southerly gales bring wet weather.

On the Coast of Egypt from November to March the prevailing winds are from northward and westward with much rain. Strong gales from W.N.W. clear the weather. In January and February the weather is more moderate, but March is a bad month. The great heat of summer is tempered by the sea breezes, and the winters are mild. In June the easterly winds haul to the northward, and remain in that direction until September, towards the end of that month the easterly winds return.

The climate of Lower Egypt is very warm in summer, but the nights are cold on the shores of the Delta. In March, the *simoon* or hot south wind begins to blow, sometimes lasting three or four days. With this wind the atmosphere is thick and heavy; has a livid tint; heat almost suffocating. Clouds of fine dust, small flies, &c., are blown off shore by this detestable wind. At the beginning of June, light easterly winds are felt during the day, the sky is cloudless; at night northerly breezes cool the air, and dew is abundant.

Red Sea.—The climate of the Red Sea, is with the exception of that of the Persian Gulf, perhaps the hottest in the world. In the month of July, the thermometer on board ship has been known to remain at 98° Fahr. for three consecutive days and nights; in August it not uncommonly rises to 105° in the shade.

In passing out of the Straits of Babu'l-Mandib into the Gulf of Aden, going south, or in getting into the Gulf of Suez when bound north, a pleasant change of temperature is at once experienced.

From October to May when traffic is most brisk in the Red Sea the winds in the central channel blow from N.N.W. in the northern portion of the Sea, and from S.S.E. in the southern. In the middle space between these winds is a belt of calms and light airs, which varies in size and oscillates in position. Between June and September, the hot season, northerly winds of variable strength prevail from Suez to Babu'l-Mandib with but little interruption. Hurricanes are almost unknown in the Red Sea, but fierce gales are of frequent occurrence.

Between Suez and Jiddah northerly winds prevail all the year round. From

December to March inclusive they blow fiercely, moderating at full and change with an occasional southerly wind, foretold by damp weather and a falling barometer. If the northerly winds travel to the westward between Suez and the Dædalus reef they bring off dense fogs of dust. In the Gulf of Suez light fleecy clouds hanging above the Sinaiatic mountains or capping them means that strong winds from the northward may be expected.

Between Babu'l-Mandib and the parallel of 17° N. southerly winds prevail from October to May, blowing strong in January, bringing hazy weather in December with squalls and rain. During March, April, and May, the weather is unsettled, with easterly squalls, occasional rain, and sometimes sand storms, obscuring every object within 100 yards, but leaving a clear sky overhead; so that what may seem fine weather to the passenger, may be bad weather to the pilot.

The north-east monsoon of the Indian Ocean blowing into the Gulf of Aden becomes a south-easterly wind in the southern part of the Red Sea. In proceeding southward in this season head winds will still be found on leaving Babu'l-Mandib, but blowing with less force.

In the Gulf of Aden between May and September, or during the *S.W. monsoon*, the winds are very variable; freshest by day, and lightest by night. June is an unsettled month, weather generally hazy. In July and August after leaving Babu'l-Mandib, strong westerly and south-westerly winds may be expected; but as a general rule a vessel will lose the wind before reaching Ras Rehmat, a cape on the Arabian coast 250 miles eastward of Aden, which signifies in Arabic "the cape of the wind's death," and will not fall in with it again until the fierce S.W. monsoon bursts upon her through the channel between Sokotra and the mainland of Africa.

During the S.W. monsoon on the African coast the heat is insufferable, especially with southerly winds, at which time the thermometer will often rise to 110° Fahr. The natives always leave the coast at this season for the mountains, to escape the heat, and consequently, there is an almost total cessation of trade. Off this coast heavy land squalls are experienced from S.S.W.; these land winds are always parching hot and very disagreeable. The atmosphere in the S.W. monsoon is generally hazy, thus adding to the difficulties of the navigation and trying the temper of the passengers.

The N.E. Monsoon begins early in November, and blows fresh at the full and change of the moon. In December and January heavy rain is often experienced, but the weather in this monsoon is generally clear and pleasant, thermometer ranging from 68° to 80° Fahr. It is the principal season for trade.

Indian Ocean.—After passing Cape Guardafui the steamship fairly enters the Indian Ocean, the wind and weather of which in the different monsoons will be found graphically described by the table on chart at p. 290. Between November and March inclusive, fine clear weather will be experienced between Guardafui and the Equator, after which, and as far as latitude 10° S., in passing through the *N.W. or middle monsoon*, many irregularities will be encountered, with occasional heavy gales, thunder, lightning, and much rain. This is the season of the hurricanes at Mauritius, and although the steamship's track lies without their region, bad weather may be met with after passing 10° S. Once in the S.E. trade, fine weather will prevail until the Australian coast is made.

Between May and September the steam-ship, on leaving the Gulf of Aden and entering the Indian Ocean, will experience the full force of the S.W. monsoon, which blows fiercely and with little intermission in June and July, with a heavy sea and bad weather; it moderates in August. This continues as far as the equator, when the S.E. Trade is entered, and fine weather prevails until the Australian coast is reached.

Australia.—Off Cape Leeuwin, from April to November, the weather is generally very unsettled and tempestuous, gales from S. and S.W. are frequent, the south-westerly winds bringing a long and incessant swell.

From January to April the winds are more moderate, blowing at times from the eastward, especially after leaving King George's Sound. In these months, in crossing the Great Australian Bight, the wind generally revolves with the sun; a change to the *southward*, being at all seasons foretold by a *rise* in the barometer, and winds from the *northward* being foretold by its *fall*. In Bass' Strait similar weather will be met with as on the open south coast of Australia, except in the eastern part, where the strongest gales blow from the south and south-east, accompanied by thick weather and rain. Between January and March easterly winds and fine weather is not uncommon.

On the coast of New South Wales the prevailing winds are N.E. between November and March, and westerly between April and October. But between November and March oppressive hot winds from the N.W. blow fiercely at times, followed by a sudden shift to S.E. and S. The effect of the sudden changes is so great that the thermometer at Port Jackson has been known to fall from 100° to 64° Fahr. in less than half-an-hour.

Between May and September the cold western winds are most prevalent with fine weather and a dry atmosphere; the gales come from the eastward and bring rain with them, and there is no settled weather in these months with any winds from the sea. In June, July and August these easterly gales are felt in their full violence.

The main cause of the proverbial bad weather between the coast of New South Wales and New Zealand is the meeting of the warm current setting to the south-east and south from the Pacific Ocean, with the slow, cold current always setting north from the Antarctic regions. These opposing waters meet between Cape Howe and Sydney. Hence, the uncertain weather, constant gales, and confused sea generally met with between New South Wales and New Zealand.

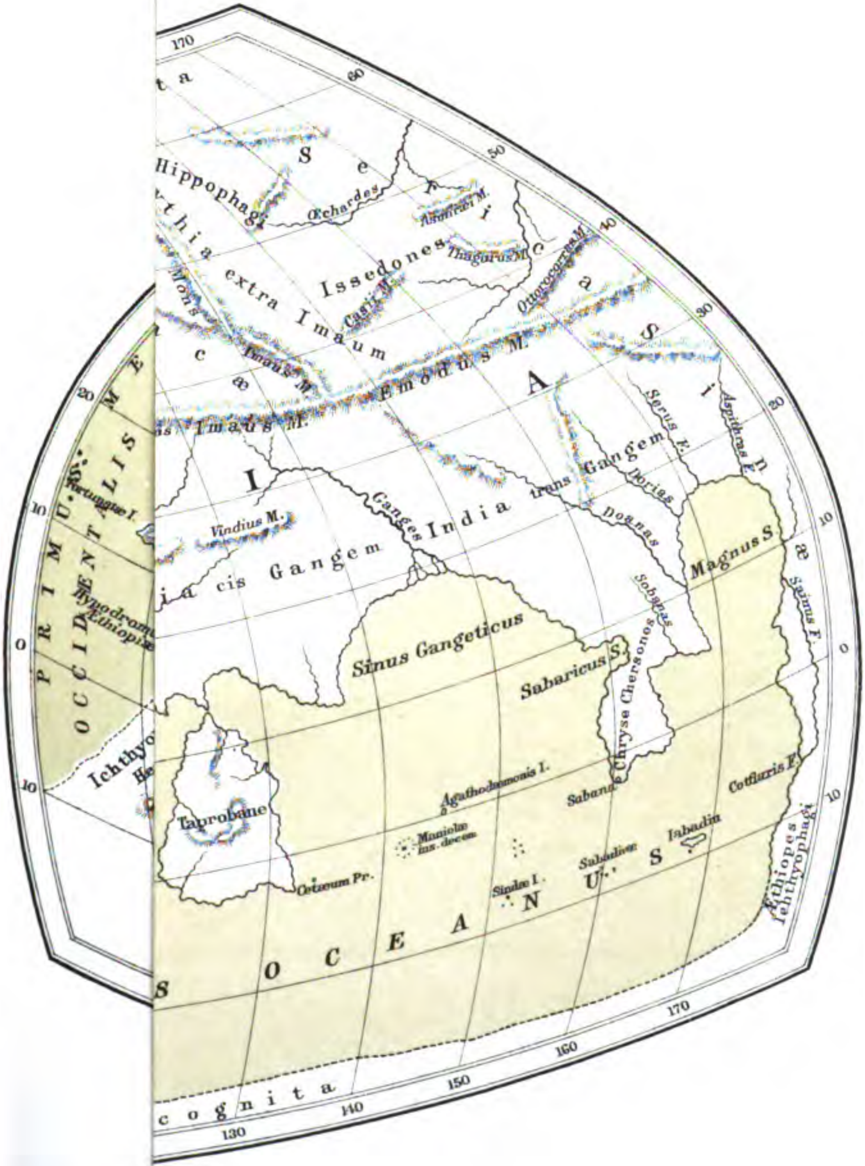
MR. NORMAN LOCKYER CONTRIBUTES THE FOLLOWING PAGES ON THE SUBJECT OF UNIVERSAL TIME:—

"In the preceding Chapters we have seen how to the student of Natural Science a sea voyage is a never-failing source of delight; it must not be imagined, however, that there are not phenomena to be studied from day to day, which are quite as interesting to lovers of the various branches of Physical Science.

One of the most remarkable experiments in the domain of Physical Science made during the present century, has been that which we owe to the genius of the illustrious Foucault, who has demonstrated for us, after so many thousand years of doubt, the earth's daily rotation on its axis. Now, the various results of this rotation can nowhere better be studied than at sea, especially on such a voyage as between England and Australia, which are nearly antipodal to each other; and there is an especial interest in these results just now for the reason that the time arrangements of our planet are about to be considerably altered and improved. On these grounds, therefore, we purpose to show in the present Chapter how a voyage in an Orient steamer in either direction may be utilised in acquiring accurate information on a subject of world-wide interest.

We have already, in the account of Navigation, referred to the question of longitude, which of course forms a part of the main subject; we shall, however, have to treat it in a more general way, in order to state more fully the various alterations in the planet's time arrangements to which we have already referred.

To begin at the beginning. Before the earth's rotation was accepted, we find the world known to the ancients to be that part of our planet bounded on the north by the Baltic and Black Sea; and on the west by the Shetlands, Ireland, the coast


Hippophagi
Œchardes
Asmiræi M.
Issedones
Thagurus M.
Ottorocorras M.
Casii M.
Mons
extra Imaum
Imaus M.
Emodus M.
Imaus M.
Serus F.
Aspithras F.
Gangem
trans
India
Ganges
Dorias
Doanas
Sobanas
Vindius M.
cis Gangem
Magnus S.
Sinus F.
Sinus Gangeticus
Sabaricus S.
Chryse Chersonesus
Sabana
Cottiaris F.
Agathodæmonis I.
Taprobane
Maniolæ ins. decem
Coryceum Pr.
Sindæ I.
Sabadivæ
Iabadiu
Æthiopes Ichthyophagi
O C E A N U S
Fortunatæ I.
Hynodromi Æthiopiæ
Ichthyo
OCCIDENTALIS
PRIMUS M.
cognita
170
60
50
40
30
20
10
0
10
130
140
150
160
170
20
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0
10

of Spain, and a part of Africa; on the east by Ceylon; and on the south by an imaginary sea. Long before observations of latitude and longitude in the present sense were thought of, the ancients knew that the length, or longitude, of the world as they then knew it, from Spain to Ceylon, was greater than its breadth or latitude, from the imaginary sea to the Baltic; and in the two dimensions of the oblong world imagined by them, we have the origin of the terms longitude and latitude, which are still retained though we are dealing with a sphere.

Again, before they knew the world was round, they attempted to lay down lines showing latitudes and longitudes. The way for this was prepared by the elaborate records and studies of Eratosthenes touching the various distances in stadia from one place to another; coupled with the fact that was then established, that this oblong world of theirs really was laid out on a spherical surface, and not on a flat one; it was seen that the lines of longitude must pass through the poles of the sphere, and that the lines showing latitudes must be parallel to its equator; they also saw that to deal with longitude accurately, one of the semicircles must be taken as a starting point, this they called *primus meridianus*—the origin of the words prime meridian, about which we shall hear so much in the next few years. In the first maps which were prepared by Marinus of Tyre and Ptolemy, two centuries after Christ, the top of the map was north and the left hand west; and although this was reversed for a time by the Arabs, because they wrote from right to left, the first mode has remained down to our own day. It was imagined, that the prime meridian should pass through the most westerly point of the known world, which was then Cape St. Vincent, in the region which they had most closely studied, and this strangely enough passed through the eastern portion of Britannia, and very near the Shetlands, the Ultima Thule of the ancient geographers; we may say, in short, that the first meridian known, so far as England was concerned, passed very near the present meridian at Greenwich.

The next geographical discovery made was that the Fortunate Islands, now called the Canaries, in which the imagination of the Greeks had placed the Gardens of the Hesperides and all their delights, had a more westerly longitude than the Sacred Promontory, now Cape St. Vincent, and maps were therefore constructed with this prime meridian. Such a map, showing the world according to Ptolemy's ideas, with the longitude reckoned from the Fortunate Islands, is given in illustration of this article.* Some more accurate geographers, however, rebelled against this, for the reason that it was difficult to determine the exact longitude of the islands; these geographers therefore preferred to place the prime meridian so that it passed through the most westerly point of Africa, adjacent to the islands; and this prime meridian was favoured by the Arab geographers. Later on it varied to points even to the west of the Fortunate Islands, and at last settled down on Ferro, one of the Canaries, till such time as the observatories of Paris and Greenwich were founded. Since then other prime meridians have been introduced, and we may fairly say that nowadays the confusion in our maps owing to this circumstance, is greater than it ever was at the time when a knowledge of geography was confined to the students in the great Alexandrine or Arab schools.

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* The map is based upon a larger one, given by Bunbury in his admirable *History of Ancient Geography* (Murray).

No prime meridian, for instance, ever passed through Alexandria. But what the Arabs were greatly interested in was the meridian running from north to south, and dividing the known world into two equal portions, one east and the other west. Where this line cut the equator was, according to them, the centre of the earth, or, at least, of its surface, having no latitude, and situated at equal distances, 90°, from the four cardinal points of the earth. Here they imagined the famous Dome of Azin or Arin, an enchanted temple or castle most difficult of approach. According to the opinions of some, in it was to be seen the throne of Iblis, and it was the home of demons. The Persians and others believed this to be the centre of created things and of their contrasts, and stories fabulous and impious are told of its inhabitants, who were called Manichaeans.

The first demonstration of the fact that differences of longitude are associated with differences of local time are to be found in Pliny's Natural History; but this fact, which comes out so strongly in a sea voyage, was cloaked to the ancients by the other fact that their division of the day into hours was so widely different from our own. They had only the sun-dial to guide them, and this being so, they made the best of the matter by dividing the intervals between sunrise and sunset, and sunset and sunrise, into twelve hours, the lengths of which of course varied at different times of the year; so that in England the day hours in summer were twice as long as they were in winter. It was the influence of Ptolemy which eventually got rid of this inconvenient arrangement; and as a result of the change of idea we have our clocks, which date from the thirteenth century, dividing the earth's rotation into two periods of twelve hours. This is the origin of our ordinary time, one series of twelve hours beginning at midnight, another series at noon; a day, say the 1st of January, beginning immediately after midnight of the 31st of December.

The preceding is a rough statement, which we must now elaborate somewhat.

The time used in astronomical observatories is not ordinary time, it is star time

—a thing vastly different. We know that the earth goes round the sun, and we also know that the stars are so far away that from whatever point of the earth's orbit we regard them they always lie in the same direction; if a telescope, therefore, could always be bracketed on to the same star during a whole year, the telescope would always remain parallel to itself; the exact period of the earth's rotation therefore is accurately determined by observing the same star with a telescope in the same position on any particular night and on the following one; this period has been divided into twenty-four sidereal hours, each consisting of sixty sidereal minutes, each consisting of sixty sidereal seconds; and it is obvious that by watching the stars by an accurate clock, and taking some part of the heavens as a start point, the same methods which have enabled us to lay down various places and points on the earth with their proper latitudes and longitudes, will allow us to map down the stars in like fashion with reference to the earth's rotation, its poles and its equator. Thus we have the celestial equator, the celestial poles; the positions of stars, north and south of the celestial equator are defined by their Declination, the equivalent of our latitude; and the distance from the celestial prime meridian, which passes through the first point of the sign Aries, defined by their Right Ascension, the equivalent of our longitude reckoned east from Greenwich.

This star time begins when the first point of Aries crosses the meridian of any observatory, and is counted through twenty-four hours to the next transit of the same point.

But, however important this sidereal time may be for recording the exact period of the earth's rotation and all that follows from it, it is useless for the purposes of ordinary life, for the reason that twelve o'clock, say, would mean, at one time of the year, the middle of the day, at another midnight; at another the time of sunrise, at another the time of sunset.

Astronomers, however, use it to get another time which is much more adapted for the ordinary purposes of life. This time has reference to the sun instead of to the stars, and is so arranged that its start point is always exactly noon; like sidereal time, it runs through twenty-four hours; this is termed astronomical mean (or average) time, for the reason that true sun time, such as that shown by a sundial, is for two chief reasons, which we need not refer to here, too irregular for astronomical use. To bring about perfect regularity and precision astronomers make use of an imaginary sun going at an equal rate along the celestial equator, instead of the true sun going with a variable rate along the ecliptic; and the length of the mean or average solar day is the average of all the true solar days in the year.

We have now, then, passed from star time to mean astronomical time, each running from one to twenty-four hours, the former beginning with the transit of the first point of Aries, which may happen at any time of the day or night, the latter with the transit of the mean sun over the meridian of a place, which can only happen at noon. There is yet something wanting for the purposes of civil life. The astronomical day—that regulated by the mean sun—begins at noon, whereas, as already has been pointed out, our day naturally begins at midnight. We have then yet a third kind of time, which is called Civil Time, and this is the time used for the purposes of ordinary life. It begins at mean midnight and runs to the next mean midnight, two batches of twelve hours intervening instead of one batch of twenty-four. The length of the civil day is the same as the length of the astronomical mean day, only the start point is different, and therefore the length of the hours, minutes, and seconds are the same, all of them being slightly longer than their equivalents in sidereal time; the reason of this is that in consequence of the earth's motion round the sun, which is from west to east, after a place on the earth's surface has got to the same position with regard to the same star after one rotation from west to east, it is not yet in the same position with regard to the sun which it occupied yesterday; it has still to travel through a small angle, and the time spent in travelling this small additional angle necessitates that the hours, &c., of sun time shall be slightly longer than the hours, &c., of star time.

It will be seen then that at the present day we are in a muddle both as regards longitudes and as regards time. Neither of these muddles touches the person who stays at home and who interests himself merely in his own personal affairs. It is only the traveller who feels the loss of time spent in comparing maps, the longitudes of which start from different prime meridians, take English and French maps as an instance. It is only the man who has large telegraphic dealings with every part of the world, or who takes long journeys frequently, or who studies phenomena which interest every part of the world alike, who has to face the difficulties encountered in turning a hundred local times into the time of his own place, be that London or Melbourne.

The loss of time and labour involved in this way has at last attracted such general attention that a Conference was called together by the American government last year to consider the whole question; and the proposals of this Conference—wise and important proposals—are at the present moment before all the civilised countries of the world for their consideration and approval.

The first resolution adopted was that in the matter of prime meridians we shall go back to the condition of things in Ptolemy's time, that is to say, there shall be but one, and that one is to be that which passes through the central wire of the transit instrument of the Royal Observatory at Greenwich. If this is acted upon, in course of years all navigators who make the voyage from Europe to Australia, or any other, will use maps in which the longitudes of the various places, like the latitudes, shall be independent of the origin of the maps; and this will be a great boon for travellers, inasmuch as it will do away with all risks arising from any inaccuracy or neglect in allowing for the differences of longitudes now shown in different maps for the same stretch of ocean.

Next the conference proposes that the present arrangement of reckoning 180° longitude east and west from the prime meridian is to stand. The various longitudes therefore between England and Australia will remain as they exist at present on English charts, instead of being all changed, as they would have been, if, as was proposed by some, the longitude should have been reckoned through 360°, going westward. This arrangement, also, has the advantage of retaining the days as they are near the meridian of 180°. It is known that some islands not very distant from Australia, were discovered by vessels going eastward and meeting the sun, and others going westward, or with it; hence the day carried to these islands was different according to the direction in which they were reached.

We pass now from longitude to time. In this matter the new proposal is that there shall be a something else in the way of time at each place besides its own local time; that instead of there being a day or a period of twenty-four hours only for each place, that there shall be a day or period of twenty-four hours for the planet taken as a whole; this day is to begin at mean midnight of the prime meridian, and is to be counted through twenty-four hours to the next mean midnight.

Now here a very important point comes in. This of course is astronomical time, *par excellence*, and yet the conference proposes that it shall begin at mean midnight instead of at mean noon, as at present astronomical time does; it will therefore run on all fours with civil time for the first twelve hours at all events, that is, till the next noon, when civil time begins again. The Conference proposes not only that astronomical mean time shall begin at midnight, but that civil time shall run from one up to twenty-four hours.

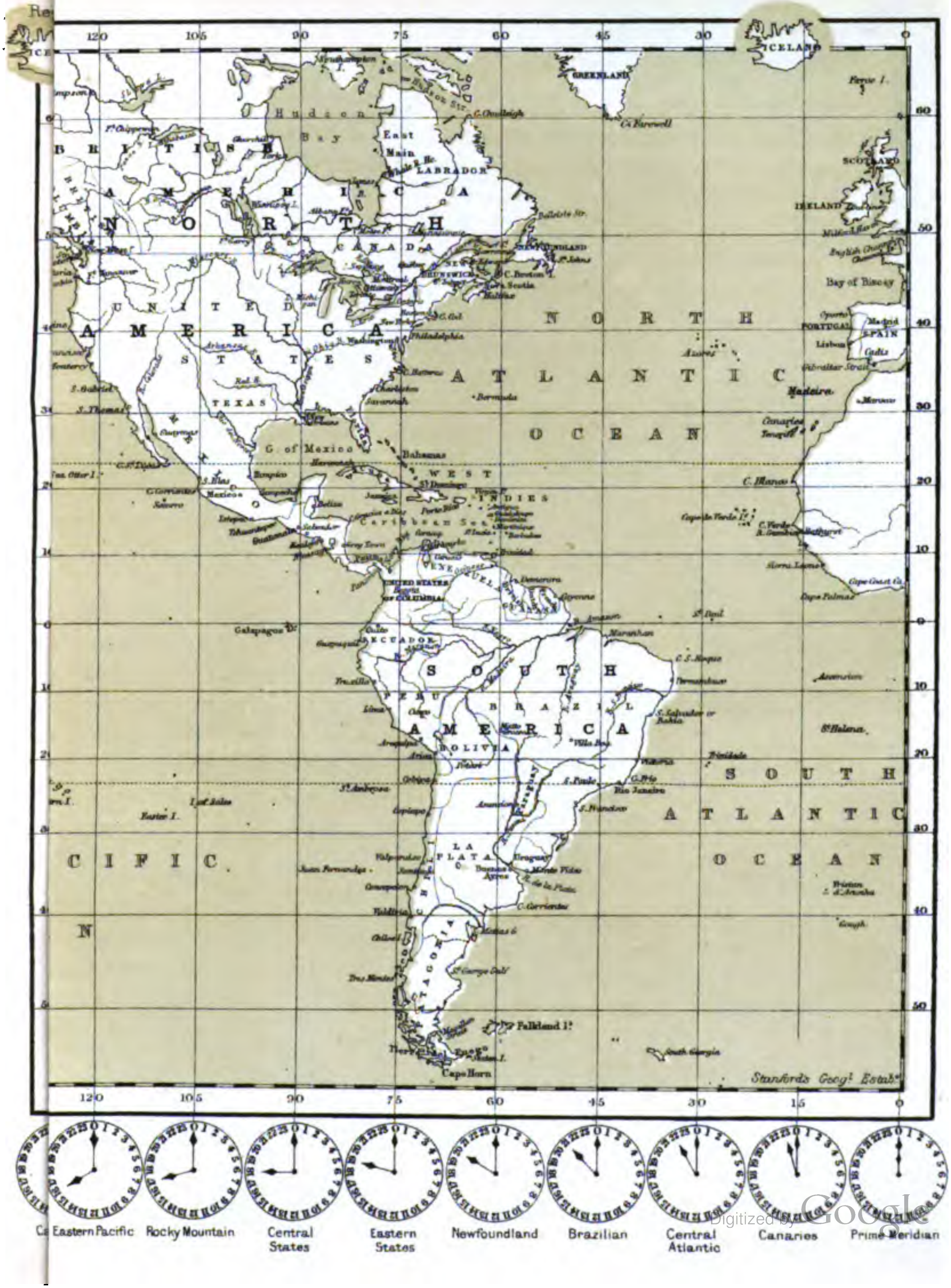
It requires scarcely a moment's thought to see the enormous simplification of our time arrangements which will be brought about if these resolutions are carried out. Locally the difference between a.m. and p.m. will be abolished. Astronomical mean time and civil time will always be the same, and any confusion which at present arises from things as they are will at once be abolished, while civil time will go on being used as it is for all the ordinary purposes of life. The new Universal Time will of course be something additional at each place, to be used especially for those purposes for which it will be more convenient. These purposes will be telegraphic or astronomical, to begin with, but will not long be thus limited.

Travellers will be specially interested in this new universal time, whether they travel by land or sea, for the reason that in future all changes of time depending upon change of longitude, whether in a long land journey across a continent like America, or in a long sea journey, will be made in hours or half-hours, starting from the prime meridian.

Watches will not be changed according to the time of the prime meridian of each country, but according to the distance from the prime meridian of the planet. In America, for instance, at the present moment, there are five times shown by the clocks from the Atlantic to the Pacific sea-board: we have Inter-colonial time, Eastern time, Central time, Mountain time, and Pacific time. All represent even hours of Greenwich time, so that an English watch will only require its hour hand altering from one ocean to another; the minutes and seconds will be Greenwich minutes and seconds, only the hours will vary. What the Americans have done in this way for the map of America, will in time be done for the whole planet; each difference of longitude of 15°, or each difference in time of one hour from Greenwich, will have a distinct name given to it, and probably for special purposes special names will be given. I submit with the present article maps showing how this may be worked out for the planet generally, the names of the standard times being suggestions only, and also in the Track Chart I have given names convenient for the special needs of a voyage to or from Australia. In the Chart I have naturally chosen as a designation for each difference of an hour from Greenwich the names of those English possessions which lie most directly under the meridian in question passed by an Orient steamer, whether steaming through the Canal or round the Cape.

It is a curious thing that in this addition to the Track Chart it has come out that the various English dependencies and colonies, or definite parts of them lie as nearly as may be one hour apart. Thus Malta and the Cape are one hour east of London, Cyprus and Natal two hours, Aden three hours, Mauritius four hours, Bombay five hours, Calcutta six hours, Singapore seven hours, West Australia eight hours, Central Australia nine hours, and Eastern Australia ten hours—quite near enough for our present purpose.

I do not for one moment propose to suggest that watches at sea shall be altered according to these new times, because if the ship-clocks are altered in this way without the interpolation of an additional meal on the days on which they are altered on a voyage from Australia, there will probably be a good deal of discontent on board. If this difficulty, however, can be got over, it will be obvious that the time shown by all

120
105
90
75
60
45
30
15
0
ICELAND
GREENLAND
C. Farewell
Hudson Bay
East Main
LABRADOR
BRITISH AMERICA
NORTH
CANADA
NEW BRUNSWICK
NEWFOUNDLAND
Nova Scotia
Halifax
UNITED STATES
AMERICA
TEXAS
MEXICO
Philadelphia
Washington
Charleston
Savannah
Bermuda
Bahamas
G. of Mexico
WEST INDIES
Caribbean Sea
Jamaica
Porto Rico
Trinidad
SCOTLAND
IRELAND
Bay of Biscay
PORTUGAL
SPAIN
Lisbon
Madrid
Cadiz
Gibraltar Strait
Azores
Madeira
Canaries
C. Verde
Sierra Leone
Cape Palmas
NORTH ATLANTIC OCEAN
Galapagos Is.
UNITED STATES OF COLUMBIA
VENEZUELA
GUIANA
ECUADOR
PERU
Lima
BOLIVIA
SOUTH AMERICA
BRAZIL
Rio Janeiro
S. Paulo
LA PLATA
Buenos Ayres
Monte Video
Valparaiso
Juan Fernandez
PATAGONIA
Falkland Is.
South Georgia
Cape Horn
St. Helena
Ascension
Tristan d'Acunha
Gough
Easter I.
PACIFIC OCEAN
SOUTH ATLANTIC OCEAN
Stanford's Geog! Estab!
Eastern Pacific
Rocky Mountain
Central States
Eastern States
Newfoundland
Brazilian
Central Atlantic
Canaries
Prime Meridian

the watches and clocks in the world may indicate true Greenwich minutes and seconds, and that in all changes necessitated by differences of longitude the hour hand alone need be altered. Indeed, I can imagine the traveller's watch of the future showing minutes and seconds apart from any locality, the Greenwich hour being given on one dial and the local hour on another."

CHAPTER XVI.

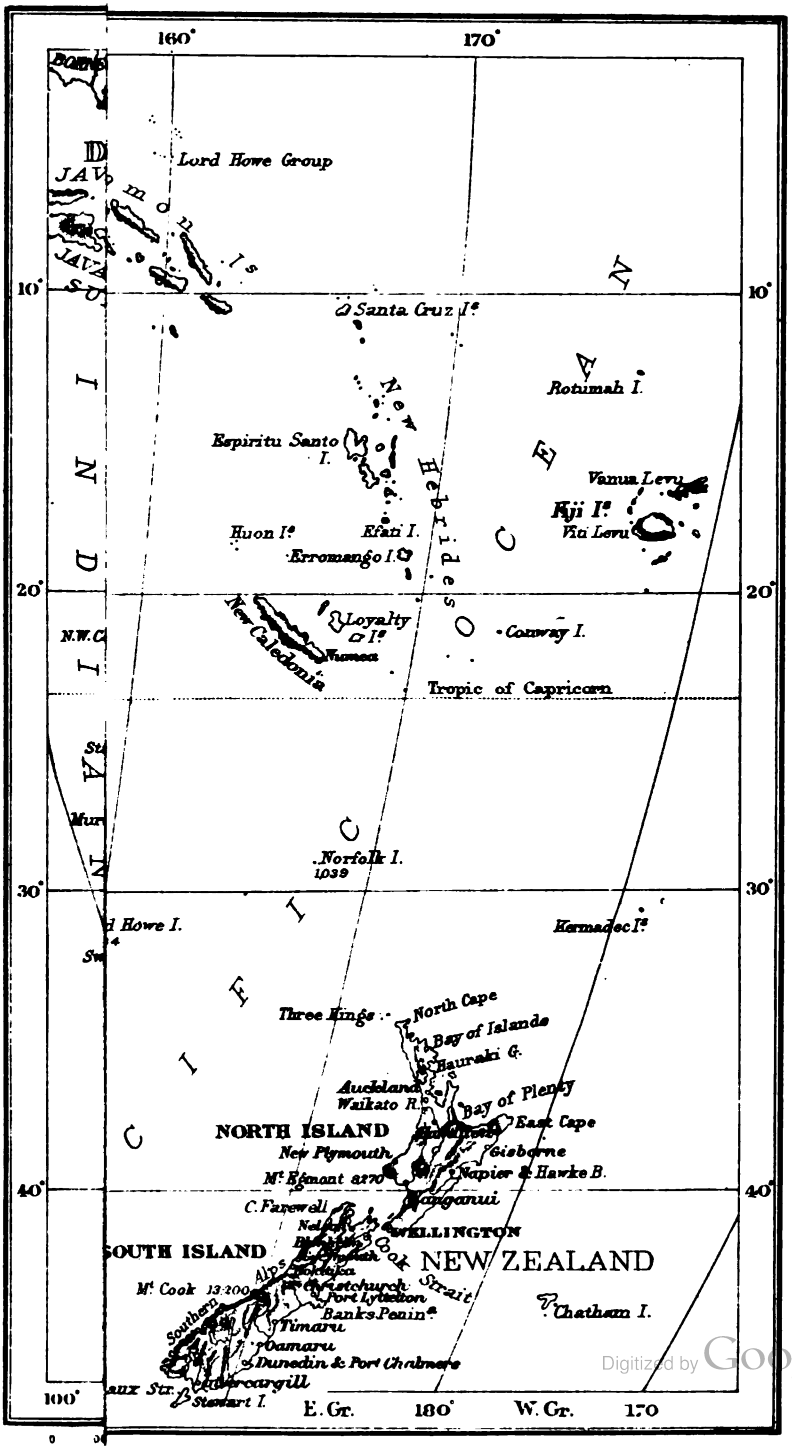
AUSTRALIA.

AUSTRALIA.—NEW SOUTH WALES.—VICTORIA.—SOUTH AUSTRALIA.—THE OTHER AUSTRALIAN COLONIES. — QUEENSLAND. — TASMANIA. — NEW ZEALAND. — OCEANIA. — GENERAL SUMMARY.

MR. H. E. Watts has revised and brought down to date the following account of the Australasian Colonies which he contributed to the two former editions of this book:—

The land to which the Orient Company's outgoing steamers are bound, the destination of the great majority of their passengers, is that new home of the British race, the great island continent of Australia. This, although geologically one of the oldest portions of the earth's surface, is better entitled to be called the New World than that to which the designation has been given. This is to England what America was to Spain—the noblest reward of her maritime enterprise, yielding to her fruits far excelling all the riches which Cortez or Pizarro ever won for the Spanish kingdom, while it is more truly a national dominion—not a foreign conquest made by force of arms, or a plantation reared amidst an alien people, but a veritable extension of the English borders—"a new Britannia in another world." This is among the victories of peace more renowned than any of war. The nation at large scarcely yet seems to realise the greatness of the treasure it possesses in its vast southern empire, the strength which it draws from these its outlying provinces, the extent to which they contribute to the wealth and the power of England, and the yet greater blessings they are destined to yield in the future.

Here are provinces which have been added to the mother-country without war—an empire which, unique in history, has been won without the sword. Our only conquerors have been the explorers—our sole battles those against barbarism and desolation. There is no ancient civilisation to reproach us with its extinction—no people worthy to live who have been forced out of existence by our coming. The process by which our Australian colonies have been built up is of the deepest interest to the political student, as an example without the complications produced


160°
170°
10°
20°
30°
40°
Lord Howe Group
Santa Cruz Is
Rotumah I.
New Hebrides
Espiritu Santo I.
Vanua Levu
Fiji Is
Viti Levu
Huon Is
Efati I.
Erromango I.
Loyalty Is
New Caledonia
Numea
Conway I.
Tropic of Capricorn
PACIFIC OCEAN
Norfolk I.
1039
Kermadec Is
Three Kings
North Cape
Bay of Islands
Hauraki G.
Auckland
Waikato R.
Bay of Plenty
East Cape
NORTH ISLAND
Gisborne
New Plymouth
Napier & Hawke B.
Mt Egmont 8270
Wanganui
C. Farewell
Nelson
WELLINGTON
SOUTH ISLAND
Cook Strait
NEW ZEALAND
Southern Alps
Hokitika
Mt Cook 13200
Christchurch
Port Lyttelton
Banks Penin.
Chatham I.
Timaru
Oamaru
Dunedin & Port Chalmers
Invercargill
Stewart I.
E. Gr.
180°
W. Gr.
170
INDIAN
JAVA
N.W.C.
Howe I.
Murr
100°

in the history of European and American States by the disturbing influence of war, but has resembled rather a natural growth than a human creation.

> "No workman's steel, no ponderous axes rung,
> Like some tall palm the noiseless fabric sprung."

A hundred years or so are all its life. In that short space of time this great Australia has all risen up to solace us for the loss of our American provinces. Certainly no one could have designed such a piece of work, as no one could have contemplated its speedy and magnificent success.

The story of Australian discovery and settlement, if it is devoid of those romantic incidents which marked the path of Spanish conquest in America, is yet a fruitful and profitable page in the history of the world. Of this newest world James Cook was the true Columbus. He was preceded, of course, as the great Genoese was, by casual adventurers who went to seek what they knew not, and found what they could not value. As early as 1540 the coast of Australia was sighted by Portuguese navigators. In their wake came the Dutch, to whom the honour belongs of first making known the existence of the new land to Europe. Two hundred and fifty years ago the island of Tasmania was discovered by the navigator whose name it now bears. The Englishmen, Dampier, Carteret, and Hollis, sailed along a great portion of the coast, but it was not until the first voyage of Captain Cook, in 1770 that the world obtained any precise knowledge of the nature and extent of New Holland. It was Captain Cook who first sailed through Torres Straits, and defined the coast-line to the north and east, though it was not until a generation after that the southern passage dividing the continent from what was then known as Van Dieman's Land was discovered. The honour of adding a true knowledge of Australia to the geography of the world may thus fairly be claimed by England. A hundred years ago, of course, no idea whatever had been formed by an European nation of the value of the land to which the Dutch had given the name of New Holland; and it was not until 1787 that Great Britain made any attempt to utilise the labours of Captain Cook. In that year it was determined to form a settlement at Botany Bay, which had been the scene of Cook's principal scientific explorations. Captain Arthur Phillip was despatched in H.M.S. *Sirius*, with six transports and three store-ships, for the new settlement, arriving in Botany Bay in January, 1788.

From these humble beginnings sprang the colony of New South Wales and our Australian empire. Finding Botany Bay an inconvenient anchorage, the settlement was quickly transferred to a site a few miles to the northward, in that magnificent harbour which had so strangely escaped the notice of Cook, now known as Port Jackson. Here within that spacious haven, the most valuable gift of nature to the Australian continent, the British ensign was hoisted in Sydney Cove, the spot which is now the centre of the busiest life on the continent, hereafter probably to be the object of associations as sacred to the future Australian nation as the Plymouth Rock is to the descendants of the passengers by the *Mayflower*. *Sic fortis Etruria crevit!*

For some years the progress of the young settlement was slow, and its prosperity uncertain. The country round the shores of Sydney Harbour is infertile, and the colony was more than once in danger of starvation when the supplies of flour from beyond the sea were delayed in the coming. The drought was severely felt; the settlers, with no outlet into a new life, were difficult to manage; and the government was necessarily but a military despotism, all the more liable to abuse as being freed from the public eye. The necessities of discipline rendered it impossible to extend the settlement into the interior. As in all communities of the kind, people of very various character and ability were thrown together. In 1790 Governor Phillip and his people were in danger of perishing by famine in consequence of the loss of the store-ship *Guardian*, under Captain Riou—a fact which may serve to illustrate the small use which the colony had been able to make of its indigenous resources. Feeble attempts were made to penetrate into the interior, but all ended disastrously. In 1798 Bass's Straits having been discovered by the navigator whose name they bear, a new outlet was discovered on the shores of Van Dieman's Land, a settlement being formed in 1803 in the estuary of the Derwent, at a spot called Hobart Town. In 1808 occurred the episode of the "Rum Revolution," Governor Bligh being deposed from office, and sent home by a body of insurgents, among whom were the leading officials and private settlers, ostensibly because of his tyranny, but chiefly because of his interference with the monopoly of spirits enjoyed by certain favoured persons in the community. From that time forward a new life began to dawn upon the young colony. The advent of Governor Macquarie, a stern but capable ruler of honest instincts and enlarged views, was the beginning of a new era for New South Wales. Although Governor Macquarie began by publishing rules and regulations of the utmost stringency, suited to the wild elements which the colony still contained in abundance, the growth of a gradual prosperity was very marked, and his name and that of Lady Macquarie in many public places recall the gratitude of the early settlers.

Several successful expeditions were made into the interior, and for the first time the chain of the Blue Mountains was broken through by Mr. Wentworth and his companions, in 1813, who penetrated into the fertile country beyond, and were the earliest to make known to the world the resources, pastoral and agricultural, of Australia. In 1821, thirty-three years after the first settlement in Botany Bay, the population of New South Wales, which up to that time included that of all Australia, excepting Van Dieman's Land, was 29,783. From that time forward the progress of settlement went on rapidly, and Australia began to emerge from the difficulties which, as of some other famous empires, were the beginning of her greatness. To trace the history of each colony would scarcely be within the limits of our duty. It is enough to say, that as the country was made known by explorers, it began to attract the attention of immigrants of all classes from Great Britain. New settlements were formed along the eastern and southern coasts, which gradually developed into separate governments, either carved out of the territory of New South Wales, as Victoria and Queensland, or independently established by private enterprise, as South Australia. Western Australia was created in 1829.

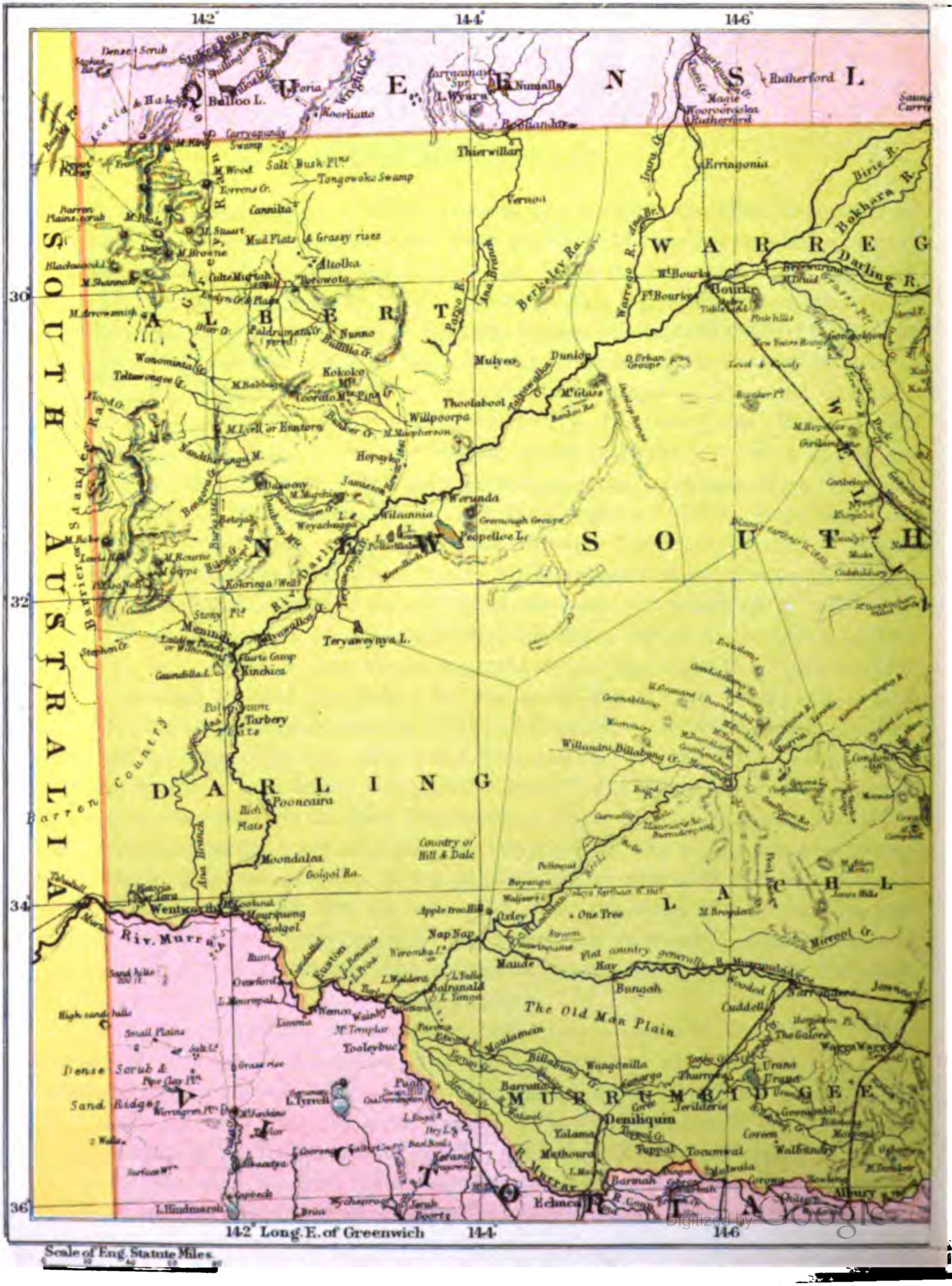
The first great expedition into the heart of the continent was made by Captain Sturt in 1845, and though bravely conducted, was unfortunate to the cause of colonisation, for by ill-luck Captain Sturt ran into a stony desert, which, though very limited in extent, was for many years afterwards supposed to represent the general condition of the Australian interior. With the discovery of gold in 1851, and the grant of responsible government to the older colonies four years afterwards, there began a new era in Australian history, the results and achievements under which may be best treated of under separate heads. The general term Australia includes what is practically a continent, with varieties of climate, of soil, and of production, as great as any of those of the older world. The colonies have, indeed, much that is common to them all in their general character as British communities, and they may be said to be almost identical in their institutions, their laws, their customs, and their aspirations. Still, when we speak of Australia, we speak, be it understood, of a tract of earth almost equal in extent to Europe, containing a dominion, with New Zealand, very nearly as large as that of the United States—part of which is within the temperate zone, a land of the orange and the vine; and a part of which is tropical, and to be possessed and turned to use rather as a plantation than as a colony; with outlying portions which are closely analogous in physical character to Great Britain, and recall the fogs and the clouds of the mother country. To the voyager in search of a new home, of health, or of simple diversion, one cannot convey any idea of Australia except by exhibiting each colony in its individual character and under a separate denomination.

NEW SOUTH WALES.

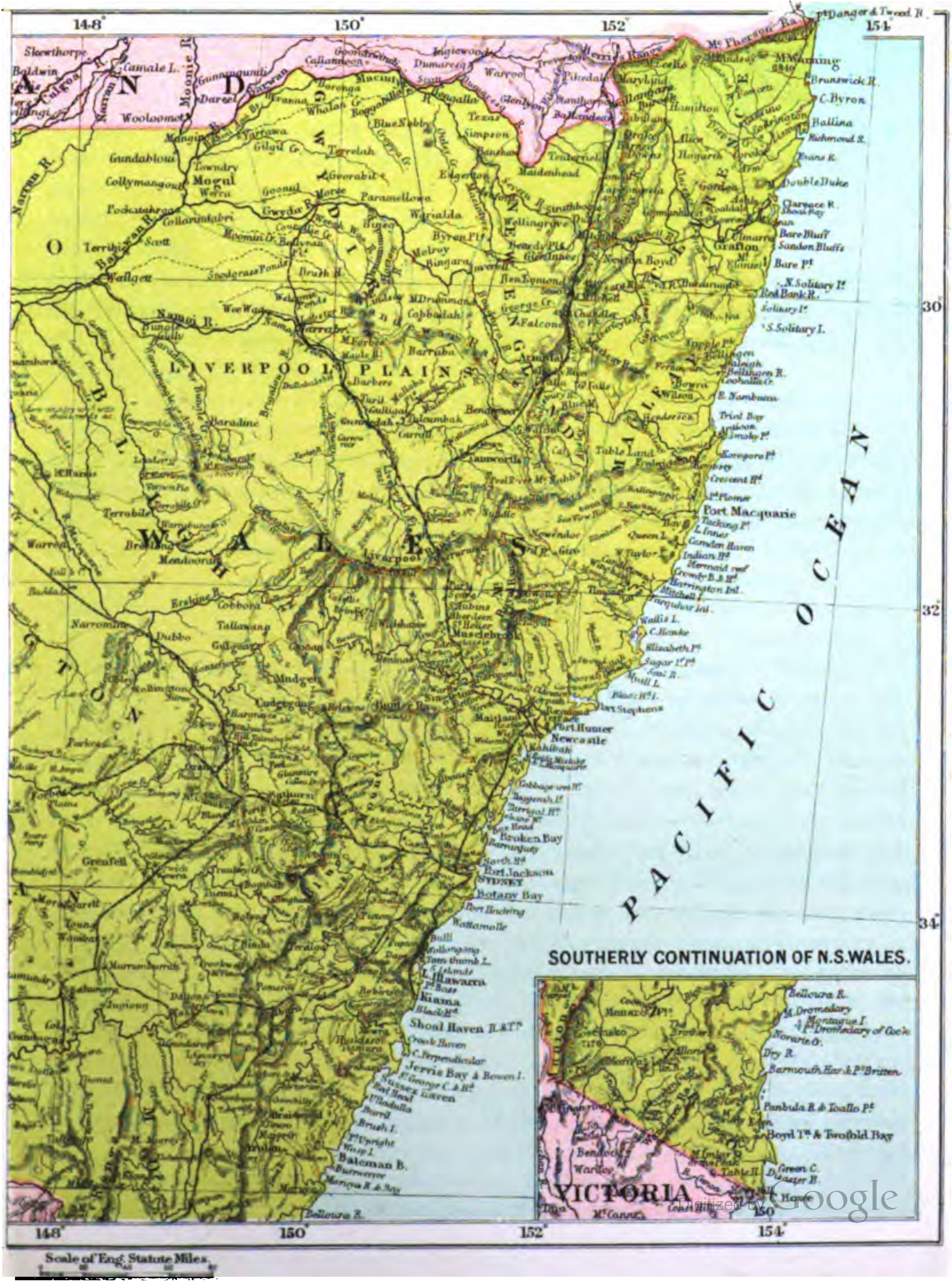
As the premier colony, which promises to be once more the most important, as it is now the richest and perhaps the most populous of these communities, whose capital, Sydney, Lat. 34° S. and Long. 151° E., is for the present one end and boundary of the enterprise of the Orient Company, New South Wales is entitled to be first described. In its history, as we have already seen, is included the first chapter of Australian development, and in its future is involved much of the future of all Australia. Although the smallest but one of the colonies on the mainland, since she had been shorn of the old Port Phillip and Morton Bay Districts (now Victoria and Queensland), New South Wales has still an extent of territory such as in Europe would be considered large. Her superficial area is 310,937 square miles which is as great as that of the German Empire and Italy together, half as large again as France, and three times as large as great Britain. The 29th parallel of south latitude, up to the Macintyre River, thence the Macintyre and the Dumaresq Rivers, and a spur of the Main Range descending to the coast in latitude 28° 3′, constitute the northern boundary of New South Wales, separating her from Queensland. On the west, she is divided from South Australia by an imaginary line following the 141st meridian of east longitude. On the south the Murray River, and a line following the range of the Australian Alps up to Cape Howe, in 10° 28′ south latitude, separate her from Victoria. Her coast line extends for about 800 miles. Her greatest length is 900 miles, and greatest breadth 850 miles. The chief natural features of the colony are the Blue Mountains, or Great Dividing Range, which runs almost parallel to the coast, at a distance varying from fifty to one hundred miles, from which spring the affluents of the Murray flowing westward, and the rivers of shorter course which fall into the sea. The most important of these last, are the Hawkesbury and the Hunter, of about 300 miles each in length, both of which are navigable for short distances. The rivers which run westward from the Dividing Range are the longest in the Australian continent.

The Murray runs half its length along the southern border of New South Wales, on its way to South Australia. The Murrumbidgee is another great river, the principal affluent of the Murray, with a course of 1,350 miles from its source to Balranald, where it joins the main stream. The Darling takes a north-westerly course nearly up to the Queensland frontier, then turns to west and south till it also joins the Murray a hundred miles below the junction of the Murrumbidgee. The Lachlan, the Macquarie, and the Gwyder are other principal rivers, with a volume of

NEW SOUTH WALES.



NEW SOUTH WALES.



water out of proportion to the length of their course, and not to be compared to American streams, but still of extreme value to the sheep-farmer as fertilising the vast grazing districts which form so important an element in the wealth of the colony. These rivers are, to those who associate the idea of a river with perpetually running water, somewhat disappointing. In the dry weather they shrink up into chains of water holes. There is scarcely ever any stream, owing to the very gentle fall, the long course which is traversed, and the rapid evaporation in that hungry soil and under that ardent sun. In winter, however, they resume their flow, and are liable to be heavily flooded.

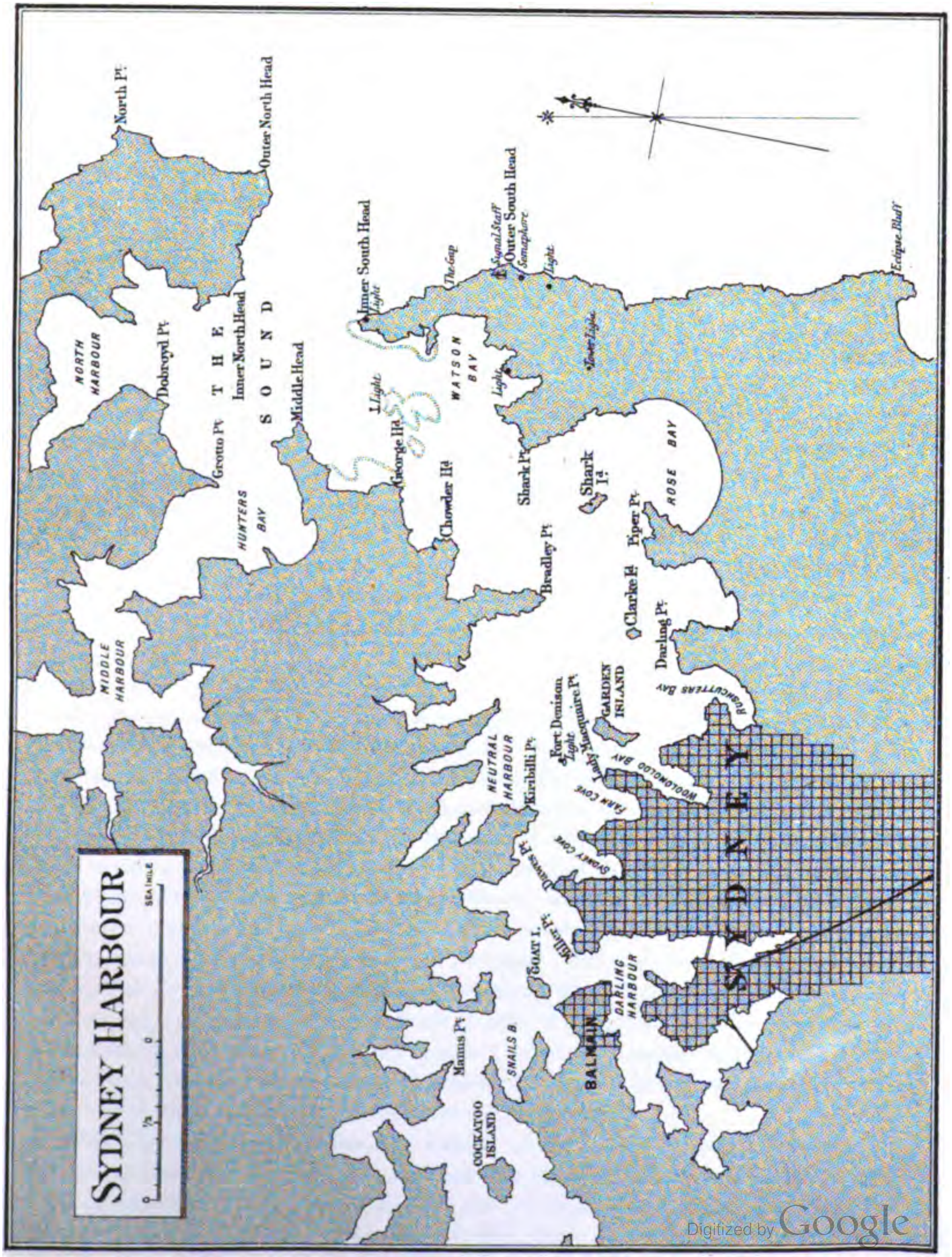
As the settlement of the country progresses and cultivation extends, with the storing of rain-water and the excavation of wells, it may be expected that the liability to drought which has hitherto been one of the chief terrors of the colonist in the interior will be greatly diminished, while the rivers will better fulfil the purpose for which they were designed by nature. Along the coast the rivers flowing eastward have deposited an alluvium of great fertility, constituting some of the richest soil of the colony, which about Illawarra and Shoalhaven is heavily timbered, the bush thickening into dense scrub, with forms of almost tropical luxuriance. Here let us say that the "bush" in Australia has a peculiar signification. Figuratively it is used for "up country," as we should say in India the "Mofussil." Literally and physically the "bush" means the wild country in its primeval state—more or less uneven plains, scantily grassed, with trees scattered here and there, as in an English park, without undergrowth. When the vegetation is dense and tangled, what in the tropics would be called "jungle," then it is called scrub, which may consist either of one species only, such as the tree-tree (*Melaleuca uncinata)*, or the mallee (*Eucalyptus dumosa*), or of various species of shrubs and trees intertwined with creepers and climbers. A forest proper, that is, large trees growing thickly together, with or without underwood, is rare in Australia, though not without representatives on the river Clarence, in the northern district of New South Wales, as elsewhere, in other colonies. The ordinary aspect of the bush, it must be confessed is monotonous and dreary. There is generally too much *eucalyptus* in the landscape, and the *eucalyptus*, at least, in its common forms of red gum, white gum, and stringy bark, is to eyes which have dwelt upon the verdure and beauty of our domestic English trees, somewhat uninteresting. The acacias or mimosas, which form the next most numerous and chacteristic of the members of the Australian flora are more pleasing from their greater variety of form and growth, and their gay flowers. It is not however, to be understood that there is any lack of beauty in the native plants of New South Wales. Some of the indigenous flowering shrubs, such as the gorgeous

Warratah (*Teleopea speciosissima*), and the Banksias with their curious and elegant foliage, are among the gayest and quaintest of their kind; and the neighbourhood of Sydney, especially on the north shore, is unusually rich in the variety and number of wild flowers.

There is much diversity of temperature within the area of New South Wales, from the humid semi-tropical heat of the Clarence to the bracing cold of the table-lands. The thermometer at Sydney shows a mean in the shade of 62° 6′. This is about twenty-three degrees higher than that of London, and comes near to the mean in some tropical countries, but the climate of Sydney is not to be judged by the thermometer. Owing to the purity and elasticity of the Australian atmosphere, in which, as the researches of the late Dr. Day, of Geelong, have shown, there is almost ever present an unusual quantity of the mysterious health-element called *ozone*, the heat is not felt so much as an equal degree of it would be elsewhere, nor is it attended, even when over 100° of Fahrenheit, by debility and exhaustion as in the tropics. Sydney in June, which is the Australian December, is one of the most enjoyable places on earth, and for eight months out of twelve at least, it is impossible to conceive a climate more delightful or better adapted to those of delicate health. The summer is long and dry, with now and then a hot wind from the north, followed by a "brick-fielder"—a dust storm, heralding the south wind and a fall of the thermometer.

In population, New South Wales, which was the first planted of all the Southern Colonies, now stands, perhaps, at their head, though for several years past she has had a close race with Victoria. The total number of persons in the colony as officially estimated on the basis of the current rate of increase, on the 30th of June, 1886, was 1,055,050, of which the males exceeded the females in the proportion of 592,267 to 462,783. About one-half of the inhabitants are now believed to be of native birth—not including the aborigines, who number only some 1,600. The annual arrivals by sea into all the ports of the Colony are about 80,000. The births are in excess of the deaths by 20,000 a year. The population of the colony at the end of 1887, may therefore be fairly returned at not much under 1,200,000 persons—of which nearly one-fourth inhabit Sydney and its suburbs. The decennial increase since 1871 is 49·10 per cent., which is 19 per cent. more than the United States, and nearly 30 per cent. more than Great Britain. The birth-rate in New South Wales is higher than that in any other Australian Colony except New Zealand, and considerably higher than that of the Mother Country. The death-rate of the Australian colonies generally is about 17 per 1,000 which is lower than the average of any European country, testifying to the extraordinary salubrity of our British southern possessions. Making all due allowance for the fact that those who emigrate are generally in the prime of life, and that thus an unusually large number of healthy persons constitute the population of Australia, there still remains ample evidence to prove that nowhere within the wide domain of Greater Britain has a man so good a chance of life as in Australia and in New Zealand.

Of late years owing to her having pursued a fiscal system more in accordance with the true principles of political economy than some of her neighbours, New South Wales has made great strides in every branch of industry and in the development of her natural resources. Broadly it may be said that everything grown in England will grow in New South Wales, though the climate is rather that of south Italy or Syria. Of late years there has been a great increase in the extent of land which has been occupied by cultivation, and in the number and variety of the agricultural products. The returns for the year 1886 show that there were 43,727 holders of land in the colony of over one acre (exclusive of the pastoral tenants, who held over 35,000,000 of acres in freehold and 3,248,626 acres in leasehold). Of this large area only 868,093 acres were actually under tillage, being a small increase as compared with previous years. Of the agricultural yield, 264,867 acres of wheat produced 2,768,330 bushels. Though the amount of land under wheat is considerably less than in Victoria, and in South Australia, the yield per acre is greater than in either colony, though very considerably less than in New Zealand or Tasmania. With a soil less suitable for the growth of ordinary cereals than either Victoria or South Australia, the return of acres under cultivation in the oldest colony does not compare favourably with that of her rivals in the south and west, but any inferiority in tillage is more than made up in grazing. New South Wales is rather the land of maize than of wheat, the production of the former being 5,000,000 bushels last year, as compared with 3,500,000 bushels of the latter. The number of acres under the vine are 5,247 acres, which yielded last year 555 500 gallons of wine, and nearly 4,000 gallons of brandy. Nearly 9,000,000 dozen of oranges were produced from 7,700 acres. In live stock, however, New South Wales is by far the richest of the colonies. Her sheep are nearly equal in number to those of all the other colonies together, the total returned last year being in round numbers 37,800,000, yielding 168,000,000 lbs. of wool. The total number of horned cattle was 1,320,000, and of horses 500,000. From these returns it is clear that the foremost of industries in the colony are wool-growing and meat-raising—the vast territories to the west of the Dividing Range and along the banks of the great rivers being at present, and probably for many years to come, almost exclusively occupied by the class called "squatters," a term which is not to be taken to mean what it does in other parts of the world. The squatter of Australia means strictly one who depastures cattle or sheep on Crown land, under lease or license. The system of holding has been considerably modified of late years, the lands having been thrown open to free selectors according to the more liberal policy which is identified with the name of Sir John Robinson. But within the last few months there has been a popular reaction against the indiscriminate alienation of the public estate, and the pastoral tenants of the Crown, or grazing leaseholders, may be said to be more secure in the enjoyment of their tenures than at any previous time in New South Wales history, since the repudiation of the original covenants made with the squatters under the old Orders in Council. At the present time no portion of the Australian continent, except Queensland, offers so good an opening to pastoral enterprise as New South Wales. Of late years, since the development of the export trade in preserved meat, and more recently since the perfection of the refrigerating process, there has been added a new source of wealth to the colony. The meat which in the old days used to be boiled down for tallow as its best use, and regarded as the least valuable portion of the animal, is now insured a market and has become an object of consideration to the grazier. The Chief Inspector of Stock calculates that the number of sheep that can be made fit for exportation annually is 4,500,000, and of cattle 260,000, from the colony of New South Wales alone. The ships of the Orient Company have all been specially fitted up with freezing compartments with a view to this trade in fresh meat, the importance of which to the toiling millions in this country as well as to the colony is incalculable. Next to the pastoral and agricultural resources of New South Wales must be ranked her natural wealth in minerals. This in variety excels perhaps that of any other colony in the south, though the yield of gold, as elsewhere, is on the decrease. The total production of the precious metal, which in 1871 was valued at £1,250,000, in 1886 had sunk to £366,294 chiefly through the exhaustion of the surface diggings and the diminution of the number of persons engaged in gold-finding. The total value of the gold which up to the latest return has been yielded by New South Wales is returned at £36,000,000. There is reason to believe, from the report of the Royal Commission appointed to inquire into the gold fields of the colony in 1870, that though the industry of gold digging has ceased to be as attractive as it was to the individual miner, the auriferous resources of New South Wales are far from being exhausted—a vast field for enterprise being still presented even in the old gold fields, which only needs capital and proper machinery to be developed. Recently there have been passed several laws removing the restrictions on the mining industry, which it is hoped will bring about an access of enterprise in the gold districts. In coal, the colony possesses a treasure scarcely inferior in value to


SYDNEY HARBOUR
SEA MILE
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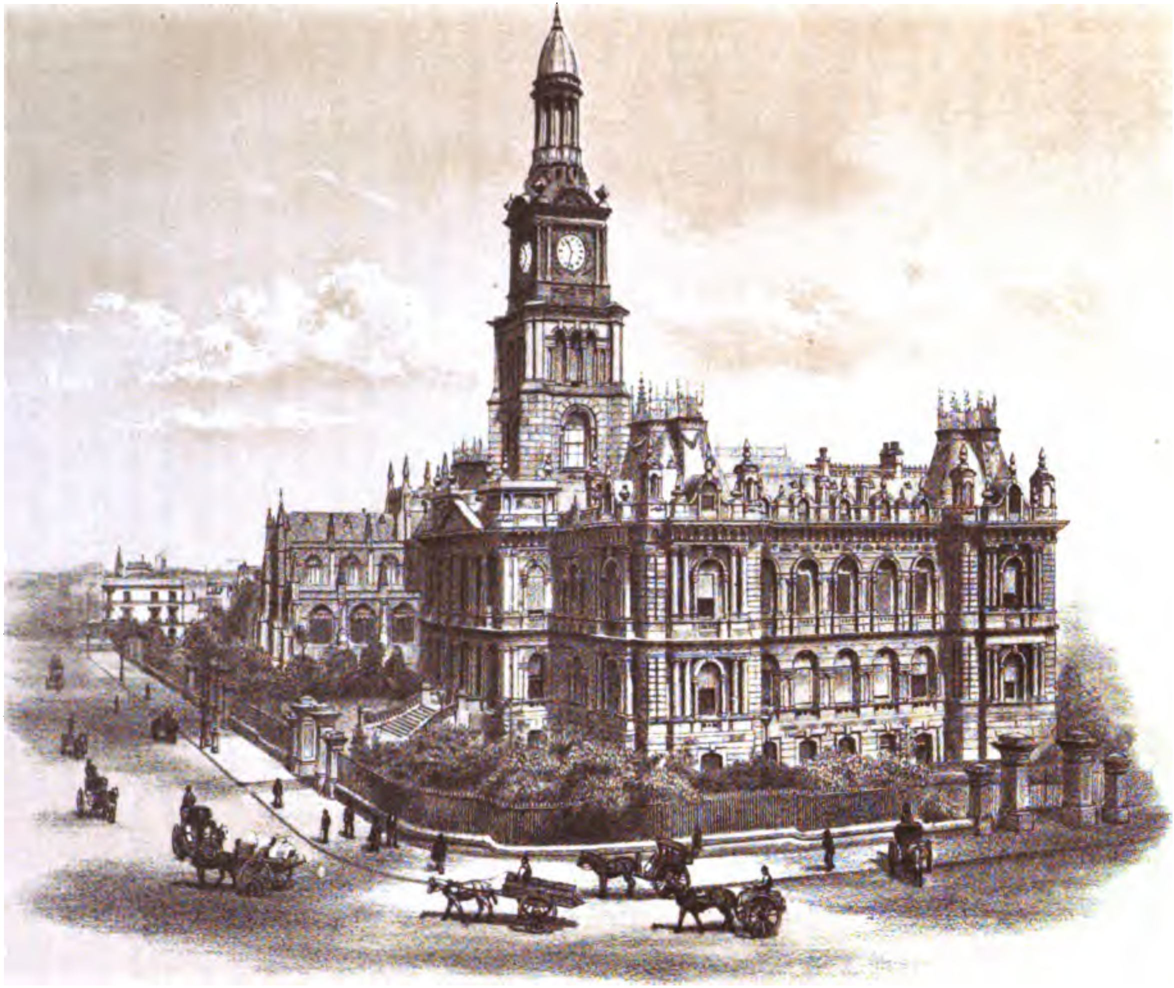
1
North Pt
Outer North Head
NORTH HARBOUR
Dobroyd Pt
THE SOUND
Inner North Head
Grotto Pt
Middle Head
HUNTERS BAY
Inner South Head
Light
The Gap
Signal Staff
Outer South Head
Semaphore
Light
Eclipse Bluff
WATSON BAY
Light
Inner Light
Light
George Hd
Chowder Hd
Shark Pt
Shark Id
ROSE BAY
Piper Pt
Bradley Pt
Clarke Id
Darling Pt
MIDDLE HARBOUR
GARDEN ISLAND
RUSHCUTTERS BAY
Fort Denison
Light
Macquarie Pt
Lady Macquarie
NEUTRAL HARBOUR
Kiribilli Pt
WOOLOMOOLOO BAY
FARM COVE
SYDNEY COVE
Dawes Pt
Millers Pt
GOAT I.
DARLING HARBOUR
SYDNEY
BALMAIN
SNAILS B.
Manns Pt
COCKATOO ISLAND

gold. The carboniferous deposits of New South Wales are of great extent, their approximate area having been estimated at 23,950 square miles. Already 4,650 miners find employment in the collieries, while to the southward of Sydney, near Jervis Bay, have been lately discovered valuable coal seams in association with immense quantities of iron ore and fire-clay. According to the report of the Chief Inspector of Collieries, the colony may claim to be in possession of the richest, most accessible, and most extensive coal fields in the southern hemisphere, equal in thickness and in quality to any in the Old World. The aggregate amount of coal which has been already raised in New South Wales is over 32,000,000 of tons, of the total value of £17,000,000. The out-put during the year 1886 was 2,830,175 tons, bearing a value of £1,303,164. Iron, tin, copper, silver, antimony, and various precious stones, among which the emerald and the beryl are the most abundant, have also been found in the colony, and are more or less objects of commerce. Of manufactures of all kinds, those which are natural to the colony and those which enter into competition with British products, the number had increased from 6,827 in 1871 to 14,474, and this under a fiscal system which has hitherto professed to be of Free Trade. The total number of hands employed in 1886 in the various manufactures was 45,783.

Nothing can give a more striking view of the wealth and prosperity of New South Wales than the figures which illustrate the state of her commerce. In 1886 the total value of the colonial trade was nearly forty millions sterling, of which the exports amounted to £15,556,213. This is at the rate of some £41 per head of the population; which is believed to exceed the rate of any other country in the world, while it is *double* that of Great Britain and Ireland. Nearly the whole of this large trade is done with the mother-country or British possessions, the people of New South Wales being customers of England to the extent of about £6 per head of every man, woman, and child in the colony. The shipping employed in the colonial trade is equal to nearly 4,000,000 tons in the year. The amount of shipping entering the port of Sydney alone (exclusive of coasters) is now more than *double* that of London fifty years ago. At the present rate of progress, with the increase of population in Australia, and the development of new European settlements in the South Seas, Sydney bids fair to rank among the greatest of the commercial centres in the world, the chief *entrepôt* of the southern hemisphere.

The City and port of Sydney, the Capital of New South Wales represents the oldest settlement of Europeans in the New World of the South. Founded on the 26th of January, 1788, when the first site of Botany Bay was abandoned as uninhabitable, Sydney is now one of the most important and progressive cities in the British dominion, as it is the most picturesquely and favourably situated. Nothing can surpass the beauty of the prospect after entering the narrow head from the sea. The most dazzling transformation scene on the stage cannot equal the effect on the voyager of the first sight of Sydney Harbour—an effect which is all the more striking from the contrast of the stern, dark, iron-bound coast, with the soft and varied luxuriance of the view within. Only Naples or Rio de Janeiro can compare in beauty with Port Jackson, as the whole of this magnificent sea-port is called from its first discoverer, a sailor on board the *Resolution*. Sydney itself lies four miles within the Bay, which embraces along its winding and deeply indented shores some dozens of excellent harbours, with good anchorage in most for the largest ships. The distance across the two heads is about a mile, and the entrance is now admirably well lighted, and easy to make. The harbour proper of Sydney is the nucleus of its commerce, and the busiest spot in the city is the Cove, generally called Circular quay, where large vessels can lie close to the shore. The city was originally badly laid out and ill-built, its founders probably having but little idea of the greatness to which the infant capital would aspire. Of late years there has been a great improvement in the character of the architecture, while in all the appliances of civilization there are few cities in the world so well provided. There are 130 miles of street, with upwards of 60,000 houses, and a population, including the suburbs, amounting to 340,000 souls. In 1885 the annual value of the rateable property in the city was over two millions sterling. The public buildings are numerous, and bear sterling evidence of the wealth and public spirit of the citizens, if not always of their good taste. The university is one of the most important of the local institutions, represented by a handsome though yet unfinished series of halls of the so-called gothic style of the fourteenth and fifteenth centuries. It is munificently endowed, and most popular and prosperous. The new Town Hall will, when completed, be one of the finest in the world. The Roman Catholic Cathedral is being re-erected on a magnificent scale. A museum, an art gallery, a free library, and a technological museum are other of the more prominent buildings, while the public parks and gardens are of unusual extent and maintained liberally. The Botanic Gardens, laid out in an exquisite site along the shores of Farm Cove are celebrated not only for their beauty, but for the extraordinary richness and variety of the vegetable products which are here gathered from all parts of the world. Here the *camellia* and the *bamboo* flourish side by side with a luxuriance hardly equalled in their native climes, while the choicest denizens of the British greenhouse grow rank as weeds in the genial air. The suburbs of Sydney, especially

SYDNEY.



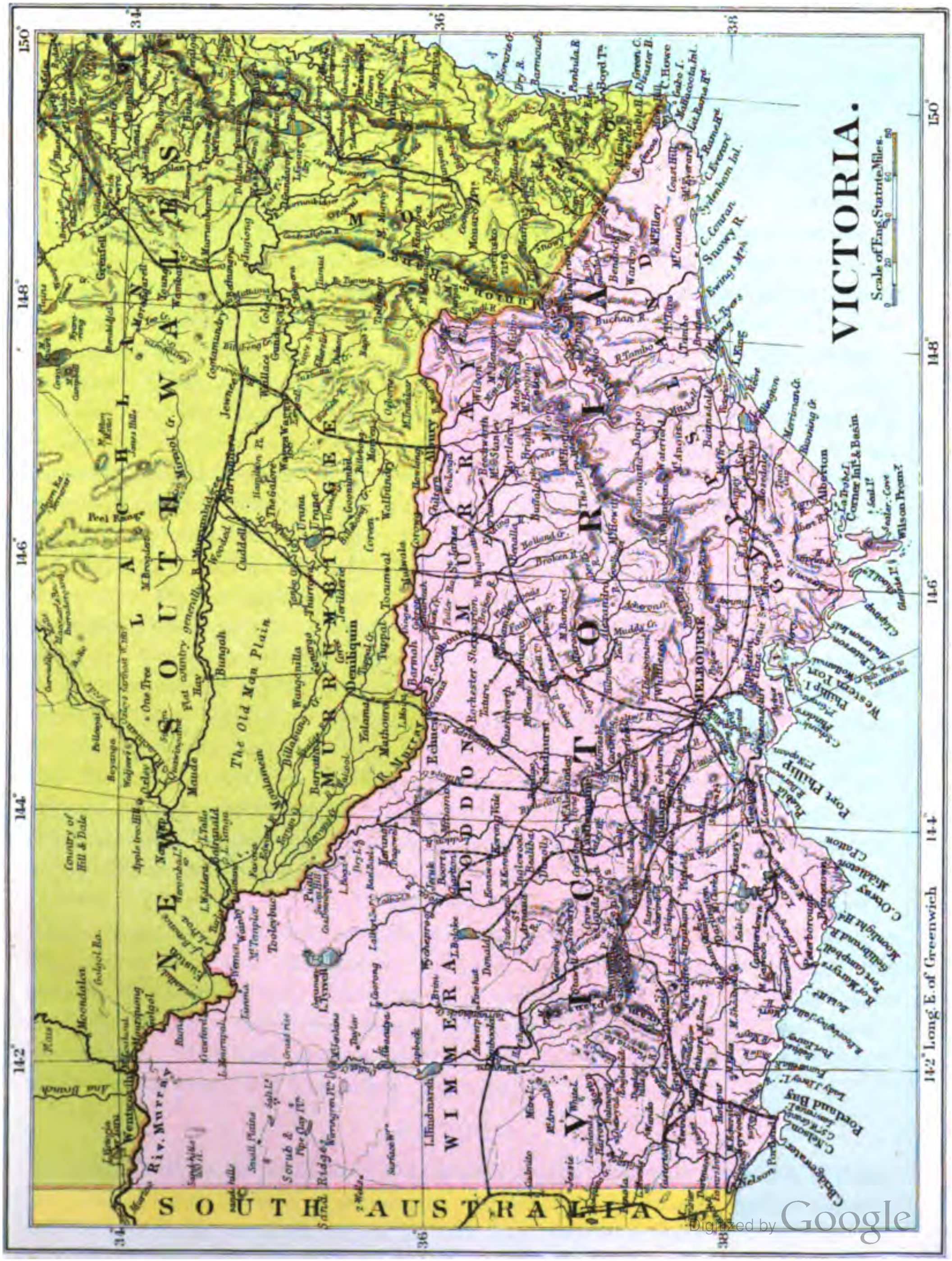
TOWN HALL

along the Paramatta river, which is the Thames of the Southern metropolis, are buried in gardens and orchards. The orange trees, some of which are nearly a hundred years old, being a sight to see, such as can hardly be matched in Valencia or the Azores.

The progress and present prosperous condition of New South Wales are in nothing so strikingly illustrated as in the figures which show the rapid development of the public revenue and of the items on which it is expended. The revenue for the year 1886 was £7,996,771, and the latest quarterly returns shew it to be steadily increasing. If we compare this with the revenues of some of the older states of Europe we shall have a striking proof of the vitality and prosperity of this community, which is not yet a hundred years old. Out of its population of less than a million persons, New South Wales is able to raise more than twice as much for the public service as either Denmark, Saxony or Greece—more than one-half the empire of Brazil yields, more than the Republic of Mexico, and more than Chili and Peru together. It is true that New South Wales has to keep up no standing army and no navy, but if her expenditure should appear to be excessive, it must be remembered, in the first place, that many charges are defrayed out of the general exchequer, which in older countries are laid upon municipalities and local bodies; and, secondly, that a very large portion of the sum is expended upon public works which are already reproductive. The first railway in the colony was opened in 1855. There were, up to September, 1887, 2,000 miles of railway in operation in New South Wales, besides 20,000 miles of telegraph wire. The railway projects at present or lately before Parliament contemplate a very large addition to the number of lines now open, the Government having decided upon the construction of new works to the extent of some 660 miles, involving an expenditure of £10,000,000 sterling. The amount spent on railways out of borrowed money up to the 31st of December, 1886, was over £28,000,000, on telegraph lines £500,000, on immigration nearly £600,000, on sewerage and water-supply nearly £1,000,000, on the improvement of harbours and rivers over £1,000,000, on roads and bridges £460,000, on other public works and buildings £1,000,000. The total expenditure which has been provided for by public loans is over £25,000,000. The best evidence that the greater part of this sum has been judiciously expended is furnished by certain items quoted by a late Colonial Treasurer in his Budget speech. On the total capital invested in railways in Great Britain the average return in 1881 was 4·29 per cent. In the United States, with their population of nearly 50,000,000, the interest yielded by the railway capital was 4·60 per cent. India returns 5·15 per cent. But in New South Wales, although the development and carrying powers of the railways are far in excess of the wants of the existing population, they yield already a return of

5·31 per cent. on the money expended in their construction—a proof, as the Treasurer was fairly entitled to say, of the excellent system of management pursued in the colony. The total amount of the public debt at the end of 1886 was in round numbers £35,500,000; to set against which it is contended that the value in the London market of the national railways alone (not reckoning the value of the land on which they stand) is £30,000,000, in support of which calculation is cited the fact that the net railway income is more than enough to cover the whole amount of the annual interest on the New South Wales debt. Well may the colony be proud of such a balance sheet as this, and quote it in refutation of the slander that the colony has exceeded its borrowing powers. As a set off against this glowing picture of New South Wales finance, it must be said, however, that this, as well as all the other colonies, derives a large portion of its revenue from the public lands, which is not so much annual income as capital taken up to meet current expenses. Out of the total revenue of 1886, amounting to the enormous sum of nearly £8,000,000, only £2,612,000 was derived from taxation, that is from customs and duties, while over £1,500,000 came from the sale or lease of public lands. This resource clearly cannot be reckoned upon to endure for ever, for the public estate is diminishing every year. On the other hand, for the present generation it is pleasant to know that, contrary to the usage in a new country, they pay little per head in taxes—less than any other colony in Australasia, and a trifle less than in the United Kingdom.

New South Wales, like every other colony of the Australasian group, with the exception of Western Australia, is endowed with institutions bearing as close an analogy to those of the mother-country as the absence of a Court and an hereditary aristocracy will permit. The government is as free as it is possible to conceive of a system existing under the British Crown, presenting all the best side of democracy. There is no privileged class and no state-endowed or established religion, while the laws afford absolute liberty as well as security to every order of the people. In 1856 the full rights of constitutional government were granted to the colony at the same time that a similar concession was made to Victoria, to Tasmania, and to South Australia, under an Imperial Act of Parliament. There are two Houses of Legislature; the members of the Upper holding their seats for life, while those of the Lower are elected by manhood suffrage under the ballot. The Governor is at once the agent of the Crown and the head of a separate representative system, being bound to act by the advice of his responsible Ministers, though charged to exercise a certain discretion as to the maintenance of the laws and the rights of the Crown. Practically the colony is independent of all control by the Imperial Secretary of State, and the


VICTORIA.
Scale of Eng. Statute Miles.
0
20
40
60
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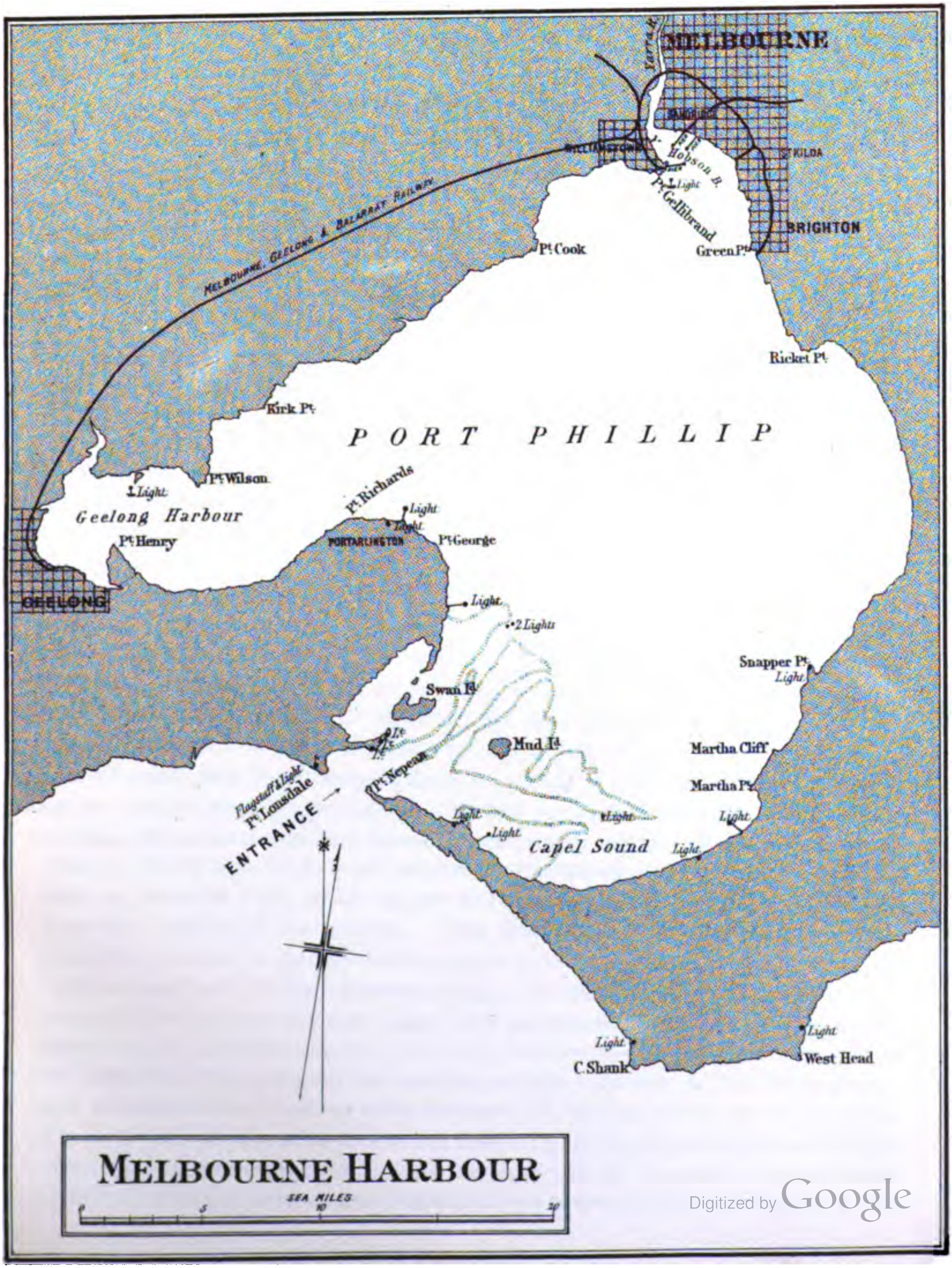
NEW SOUTH WALES
SOUTH AUSTRALIA
VICTORIA
GIPPSLAND
WIMMERA
LODDON
MURRAY
MURRUMBIDGEE
MELBOURNE
Port Phillip
Western Port
Portland Bay
Wilson Prom.
Riv. Murray
The Old Man Plain
Flat country generally
Country of Hill & Dale
142° Long. E. of Greenwich
144°
146°
148°
150°
34°
36°
38°

Legislature is permitted to pass any laws it pleases, even such as appear to be in advance of, if not in conflict with, Imperial legislation. The duration of ministries is brief, there having been nineteen Cabinets in thirty-two sessions of Parliaments. New South Wales, however, though resting on a base as popular as any of her neighbours, has earned a character for a certain greater sobriety and solidity. Being a comparatively old colony, there is a larger proportion of native, that is to say, of colonial, opinion in public affairs than in the others. By "natives" it is to be understood that those are meant who are born in the colony of English parents—the term being never applied in Australia to the aborigines, who are called "blacks" or "blackfellows." Religion and education are well cared for and strongly represented in New South Wales; religious sects are all on an equality, no one receiving special recognition from the state. The Church of England, which is governed by five Bishops, with the Bishop of Sydney as Primate, has by far the largest number of adherents; the Roman Catholic Church coming next, and the Presbyterian third. There is a University, the oldest in the Australian colonies, founded in 1851, housed in one of the most beautiful buildings in the southern hemisphere, and amply endowed by Government and private liberality. The graduates are by Royal Charter entitled to "the same title, rank, and precedence" as the graduates of British universities. There are three sectarian colleges affiliated to the Sydney University besides several other colleges and grammar schools maintained by the various leading denominations. There is a system of national education, first established in 1866, since amended in 1880, providing compulsory attendance and general religious instruction by the state teachers as well as by denominational clergymen. This compromise with unsectarianism has led to the public schools being more largely supported than they are in some of the other colonies. Their total number in 1886 was 2,046, with 180,929 scholars; besides which there are over 600 schools with 54,630 pupils not comprised in the Department of Public Instruction. Of the other social institutions and the general condition of the colony as a home for Englishmen we may more conveniently speak when we come to our general summary of life and society in Australia. The total amount spent by the state on education in New South Wales in the year 1886 was nearly £700,000.

VICTORIA.

Though by far the smallest of the colonies on the Australian mainland, Victoria has hitherto taken the lead in population, and, favoured by its geographical position and certain lucky accidents in its growth, has played an important part in the development of colonial enterprise. Lying at the south-eastern corner of the continent, it is the southernmost of the Australian colonies, extending from the 34th to the 39th parallel of south latitude. In its greatest length from east to west it is about 420 miles, with a maximum breadth of 250. On the north it is bounded by the River Murray and an arbitrary line running south-easterly to Cape Howe. On the west it has South Australia, the boundary between them being the 141st meridian of east longitude. On the south it has the Southern Ocean, Bass's Straits, and the Pacific. The total area, according to the latest measurement by Mr. Surveyor-General Skene, is 87,884 square miles, which is about one thirty-fourth of the continent of Australia, and some 2,000 square miles less than Great Britain. The colony is traversed from east to west by a range of hills rising higher in the west, where, in the corner near the South Wales frontier several peaks of the Australian Alps attain to an elevation of over 6,000 feet, with snow on their summits for the greater part of the year. This range is the watershed of the two main Victoria river-systems, the streams flowing north all running into the Murray or some of its affluents, and those south into the sea. The mountainous country on the east is densely wooded, and in some parts almost impenetrable from the steepness of the hill-sides and the thick vegetation. The whole Murray basin is almost a dead level, with a slight inclination northward and westward. The rest of the country, rising from the main range and its spurs, is moderately undulating, the bush being generally more thickly wooded than in New South Wales. Near Cape Otway there exist extensive forests of valuable timber, which up to this time have been very little explored, the most characteristic tree in this region being the Australian beech or myrtle (*Fagus Cunninghamii*), only found in this corner of the Australian continent and in some few spots in the dense valleys along the southern spurs of the dividing range. Conspicuous among the trees of Victoria, and a striking natural feature in the Gippsland ranges, is the grandest of the Eucalyptus family, *E. amygdalina*, locally called "Mountain Ash," which claims to be the tallest tree in the world, far overtopping in height and excelling in weight of timber the giant conifers of California. One specimen, a fallen tree, was measured by Mr. Ferguson, the Forest Conservator, and found to be 454 feet in length, though lacking some feet of its top. Individual trees are not uncommonly met with from 70 to 100 feet in girth a yard from the ground, with stems rising 200 feet without a lateral branch. The vegetation in the damp gullies and along the river beds in Eastern Victoria rivals in density the richest tropical jungle, and the general aspect of the country, owing to the milder climate and more abundant moisture, is pleasanter than that of the conventional Australian scenery. Gippsland, the easternmost province of Victoria,



MELBOURNE HARBOUR

is the most English in climate and in productions of all Australian lands, nor is there any plant or fruit of the old country which does not flourish here at least equally as well as at home. It is the land of the apple and the gooseberry even more than of the orange and the vine. Some of the grandest scenery in Australia is to be found along the southern spurs of the mountains in North Gippsland, nor is the usual local fault, want of water, here complained of. The Mitchell and its affluents, the Wannangatta, and the Wongongarra are rapid ever-flowing streams of considerable volumn, delightful to the eye of the artist and the angler, if of small use in the local economy. It is here and in the still more picturesque Snowy River near the eastern frontier, if anywhere on the Australian mainland, that the salmon will find a home.

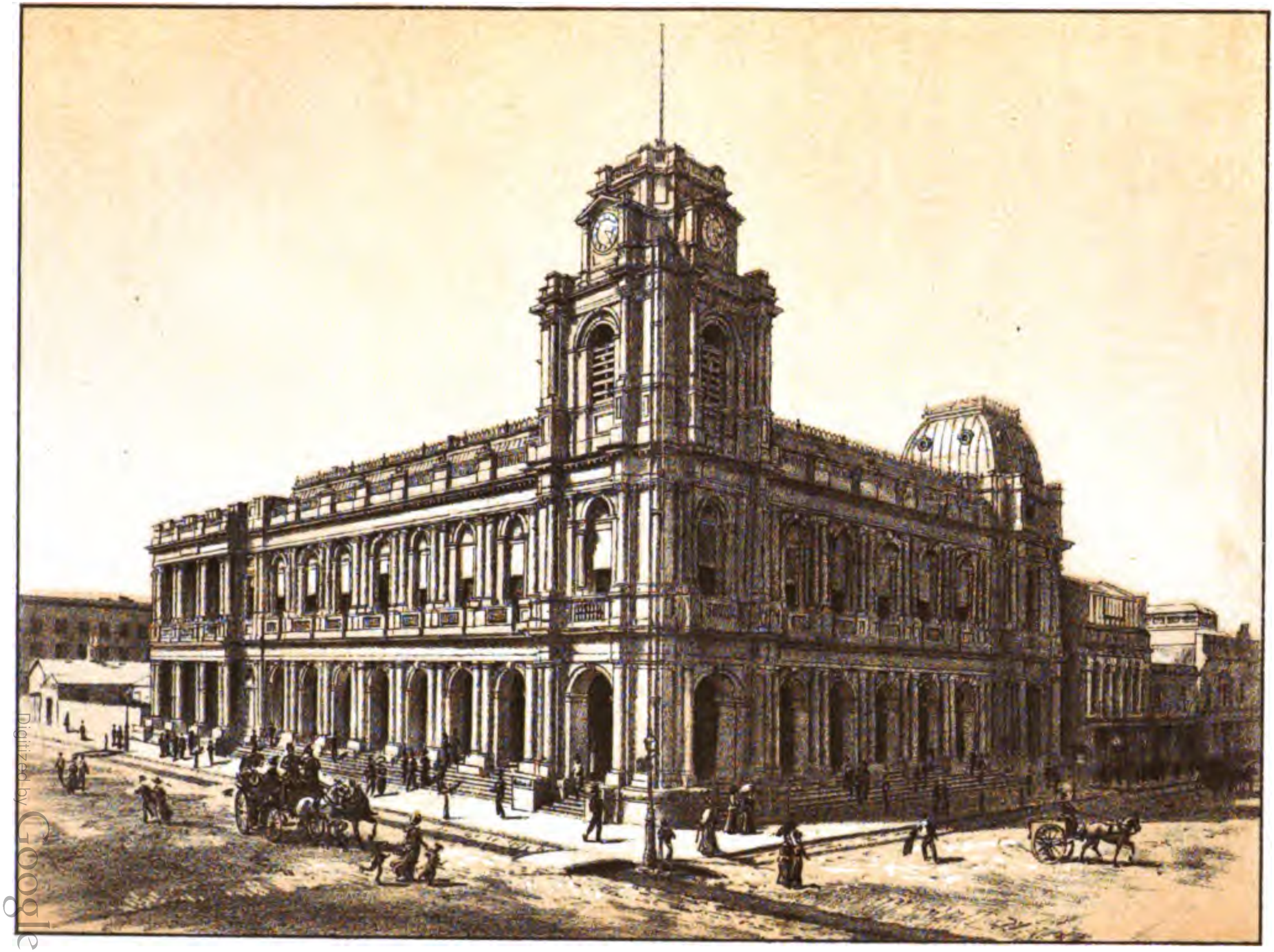
The history of Victoria up to the year 1851 belongs to New South Wales, of which the Port Phillip District, as it was first called, was an integral portion. The first attempt which was made to colonize the district was in 1803, when two ships with a military force, under the command of Lieutenant-Colonel Collins, arrived in Port Phillip from England with a view to the formation of a settlement. After staying three months, they abandoned the territory as "unfit for the habitation of civilised men." This strange judgment of the spot which now contains a larger civilised community than any in the Southern World, was confirmed on a second trial made in 1826, which was again a failure. The real pioneers of Victoria were Mr. Edmund Henty, John Batman, and John Pascoe Fawkner, who came over, the first in 1834, and the other two the year following, from Van Dieman's Land, in search of land for grazing their stock, and to carry on whaling operations. The first permanent settlement was made at Portland Bay, near the western frontier of the present colony. Major, afterwards Sir Thomas Mitchell, in 1836, made extensive explorations into the interior, and the name of Australia Felix, which he gave to the territory, may be said to embody his favourable opinion of the country. The first resident magistrate was Captain Lonsdale, the name of Melbourne being given to the site on which stands the capital of the colony, by Sir Richard Bourke in 1837. In those days, within the memory of men still alive and not very aged, sheep were depastured in what are now the busiest streets of the Victorian capital. Mr. C. J. Latrobe was named Superintendent of the District in 1839, and remained in office until the separation of Port Philip District and its erection into a colony under the name of Victoria on the 1st of July, 1851. The gold fields at Mount Alexander and Ballarat were discovered in July and August of that year, and from that period dates the prosperity of Victoria. In 1855 the new Constitution was introduced, granting to Victoria responsible government, on a basis similar to that of New South Wales. Since then the histories and the fortunes of the two colonies have greatly diverged. In Victoria the popular element has from the first been more conspicuous in the legislature than in any of the other colonies, and the influence of the democracy still remains greater, for good or for evil, than among her neighbours.

Victoria, being the most southern of the continental Australian colonies, is cooler than New South Wales, and therefore better adapted to the European constitution. The isothermal line of Melbourne, in lat. 37° 50′, corresponds with that of Marseilles, Nice, and Madrid in the northern hemisphere, but the range of temperature is not nearly so great in the Victorian capital as in any of these places. The thermometer sometimes exceeds 100° in the shade—on the 14th January, 1862, it went up to 111°, but on that day there was a great bush fire raging not many miles off. The hot winds are more disagreeable than unhealthy, and indeed some authorities attribute to their influence much of the extraordinary salubrity of the Victorian air. The lowest recorded temperature in Melbourne during twenty-three years is 27°. Frosts are not common in winter, but snow has been known, we believe, to fall once in the memory of the old inhabitant. In the interior, of course, the cold is more severe, and in North Gippsland, snow is no rare phenomenon. The mean temperature of Melbourne is 57° 4′, which is nearly 5° cooler than Sydney. The average rainfall yearly is 26 inches, and the average number of rainy days 130. A feature of the Victorian landscape, absent in New South Wales, is the lakes, of which there are several, both of salt and fresh water. Lake Corangamite, the largest, is salt, though without visible communication with the sea. Lake Colac, a few miles distant from its neighbour, is a beautiful sheet of fresh water, ten square miles in extent. The Gippsland lakes are separated from the sea only by narrow ledges of sand, through which there are entrances navigable by steamers.

Of the total area of Victoria—87,884 square miles—it is estimated that there are 36,000 square miles of rich light loam, chiefly along the sea-coast, suitable for agriculture, the geological features of which are clay, sand, lime, gravel, and tertiary and superficial deposits of cold sandy clay and loam: occupying the central and northern portions of the colony, less suitable for agriculture, though well-fitted for the vine, there are 28,000 square miles of rich black and chocolate soil: of volcanic origin, there are 12,000 square miles. The remainder is chiefly light sandy loam, capable under such a sun as that of Victoria, and when duly watered, of producing everything that can be grown in the temperate zone, with many things which it is impossible to grow in England. The whole extent of land under cultivation in 1886-7 was 2,417,582 acres, of which nearly one-half is under wheat, yielding a total of 9,170,000 bushels, which is larger than that returned from any other southern colony. The quality of the Victorian wheat ranks it with the very best in the world, and it has of late invariably carried off the highest prize at all the great exhibitions. The average produce per acre is small as compared with that of old countries, but this is accounted for by defective farming, of which the principal cause is the high price of labour, and by the droughts to which the wheat-grower has been subjected during ten years. The other principal crops are oats—which is generally cut green for hay—barley, potatoes, and green forage. Up to the year 1876, the colony imported more of breadstuff than it exported, but since then the balance has inclined greatly the other way—the total exports of wheat, flour and bread from Victoria in 1885 amounting to £826,000 in value, while the imports, which some years ago used to exceed £1,000,000 sterling in value, have now diminished to a mere trifle—the most striking proof perhaps of the stability of that industry which more than any other is essential to the wealth of a new country. Of late years much attention has been given to the cultivation of hops, the climate and soil of Gippsland and the Upper Yarra being found to be very suitable to that dainty and capricious plant. The produce of Victorian hops in the last year was over half-a-million of pounds. Wine-making is another great natural industry of Victoria, though its progress has not been so rapid as might have been expected from the singular adaptability of the soil to the growth of the vine, and the bountiful return yielded by the grapes, being at the rate of from 200 to 400 gallons per acre. The total area of the local vineyards is now about 10,000 acres, which yielded in 1885 a million gallons of wine besides 4,000 gallons of brandy. The *phylloxera* unhappily has made its appearance among the Victorian vines, but owing to the energetic measures taken by the Government it is hoped that its further progress has been stopped. The Victorian wines are reckoned to be the best produced in Australia, those grown south of the main range being free from the headiness and excess of alcohol which characterise the wines of New South Wales and South Australia. The wines named Sauvignon and Hermitage, after the grapes from which they are made, attracted great attention at the Bordeaux Exhibition, and since at South Kensington in the Colonial Exhibition, and won many prizes. They are wines that only require proper treatment in regard to racking, fining, and keeping, to rank among the highest growths of Burgundy and the Garonne. The manufacture of champagne has been lately attempted with every promise of success. For these and all other industries, however, there is one thing wanting, which is labour. Nature has done everything for Victoria, and man only is needed to develop and improve her gifts.

Victoria in population, now no longer stands at the head of all the colonies in Australia, during the last ten or fifteen years the growth of the colony having been checked by legislation, directly and indirectly aimed at the discouragement of immigration. By the census taken in April, 1881, the total population of Victoria was 862,346, the increase since 1871 having been 17·9 per cent. As this was less than the calculated increase, even from natural causes, it is evident that Victoria not only did not advance in this decennial period at the accustomed rate, but that there had been an excess of departures over arrivals within the ten years—a fact which points to some diminution of the attractions hitherto offered by the colony to immigrants. According to the present rate of increase, the population on the 30th of June, 1887, was estimated at over a million. That there is room for a greatly larger population within the limits of the colony is proved by the fact that the present number of its inhabitants is only in the proportion of ten to the square mile, while all the evidence we have of the climate and soil, and such as is furnished by the products and the weather of the colony, tend to show that it has a capacity for maintaining as large a population in proportion to its extent as any European country.

The capital of Victoria, Melbourne, has grown at an astonishing rate, and may now vie with any of the American cities in size and splendour, while it surpasses most of them in the comforts and business of life. The population, including the suburbs, which extend far in every direction, and where the greater portion of the well-to-do citizens have their homes, is now, perhaps, little under 400,000. Far inferior to Sydney in beauty of situation, and with few or no natural advantages to qualify it for a capital city, Melbourne, perhaps, is more of a metropolis than any city in the British colonies, while it contains the largest population of any town south of the equator. Most or all of the luxuries of European civilization may be here enjoyed. There is an opera house and several theatres, with three or four clubs, one of which, the Melbourne Club, celebrated for its hospitality and good cheer throughout the world, may vie in the splendour and comfort of its appointments with any similar institution in London. Among the features peculiar to it are the bed-rooms, of which a great number are available to members and to strangers who have been so fortunate as to obtain an introduction. In all the amenities of civil life Melbourne, perhaps, is even superior to Sydney, the people being more recently from the mother-country and claiming to be less provincial and exclusive than those of the northern city. The streets are well laid out and the pavements in all the leading thoroughfares at least as well kept as in England. Collins Street, though spoilt of its effect by the commonplace Government building at the east end, and by the number of old and mean houses, MELBOURNE



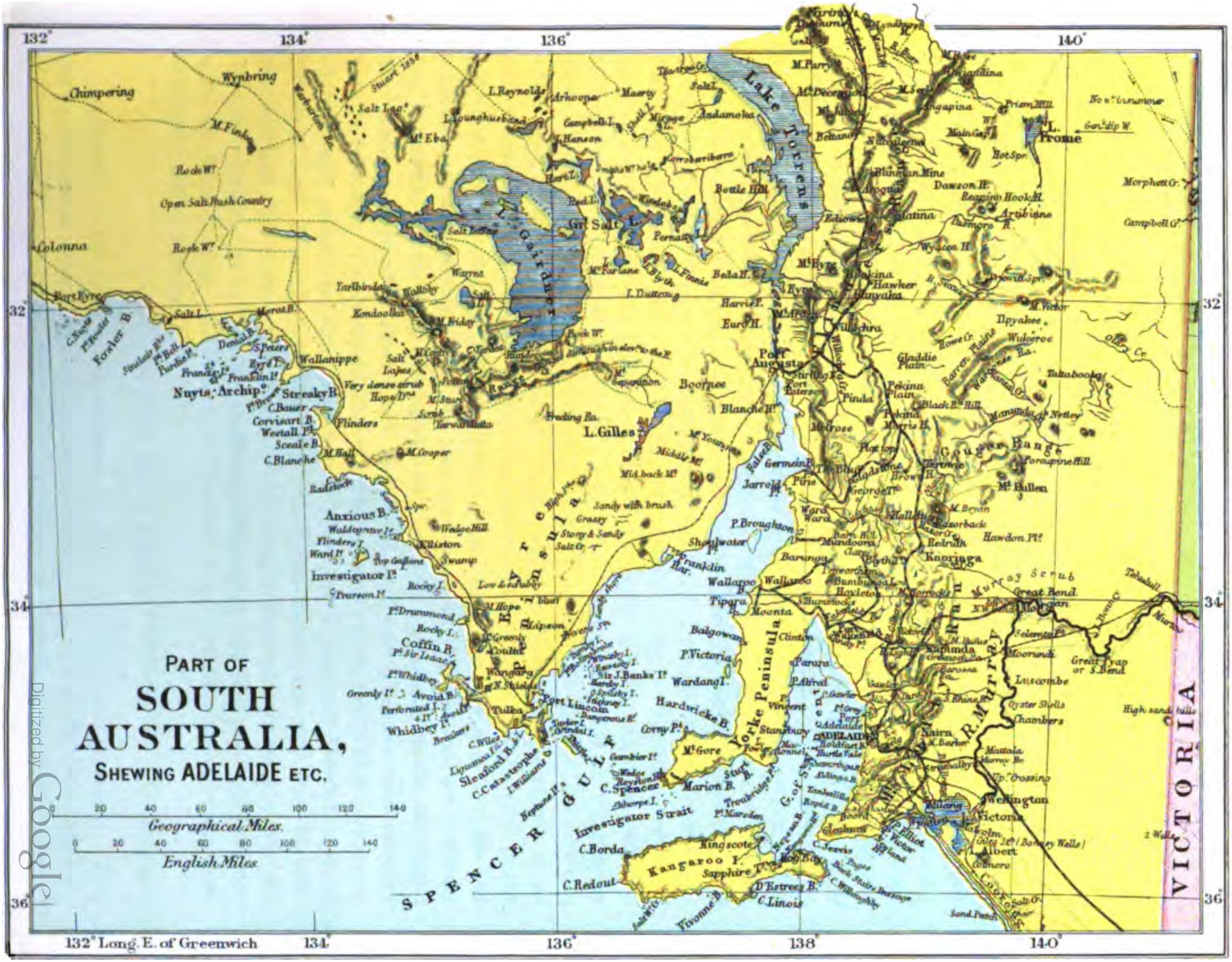
POST OFFICE

the survivals from the pre-auriferous period, is distinguished by an extraordinary number of fine stone buildings, among which the Banks are most conspicuous. The Town Hall, the Post Office, the Parliament House (yet unfinished), the new Law Courts, the Free Library, several of the Churches of the various denominations, are buildings such as may vie in good taste and magnificence with any out of London. The educational and charitable institutions of Melbourne are on a scale of unusual grandeur, and testify to the public spirit and benevolence of the citizens. The University buildings, though not in such good taste as those of Sydney, are not unworthy of the colony, which supports all its institutions with an enlightened and generous prodigality such as can scarcely be matched in any quarter of the world.

Victoria is pre-eminently the gold colony, owing its wealth and importance, it may be said, almost exclusively to the discovery of the gold-fields within her boundaries—a discovery which by a fortunate coincidence was made in the very first month of her life as an independent colony, in July, 1851. Since then there have been raised from the soil of Victoria over 54,000,000 ounces of gold, of a total value exceeding £215,000,000 sterling, an astonishing product for so small a country and without parallel in the history of the world. The yield of gold has fallen off considerably of late years, and is now considerably less than one-half of what it was in the palmy days of the diggings, when every "hatter" could reckon on picking up a nugget at the surface, while the number of persons engaged in the pursuit has fallen off in proportion. During the last few years, however, there are hopeful signs of a revival of this branch of industry, the yield of gold in 1886 having been 665,197 ounces. The number of persons returned as engaged in gold mining in 1886 was estimated at 25,214, of whom 4,476 were Chinese, the latter being almost exclusively alluvial miners, while the majority of the Europeans are employed in quartz-crushing. The Chinese population in the colony, it may be here noticed, has greatly diminished during the last quarter of a century, having declined from some 40,000 to 12,000, three-fourths of whom are miners. The average profit which gold-digging yields to the miner is a little less than £100 a year, though it must be said, as is observed by Mr. Hayter, the eminent Victorian statistician, to whom we are greatly indebted for our figures, that this does not represent the actual earnings made in the gold industry, seeing that a very large proportion of the miners are working for wages. The discovery of alluvial gold in its ancient beds, below the volcanic rock, has had a very important effect on the fortunes of the gold industry, while the invention of the "diamond drill," now largely used by the mining companies, has given a great impetus to their operations, enabling them to determine the courses of auriferous leads with greater certainty, and to sink shafts with greater power at reduced expense. The employment of machinery also for the crushing of auriferous stone and the extraction of the precious metal has been greatly extended of late years—the value of the existing gold machinery in Victoria being estimated at nearly £2,000,000 sterling. Some of the shafts sunk in search of auriferous quartz exceed 1,000 feet in depth. The deepest is that of the Magdala Company at Stawell, which is 2,409 feet below the surface. From these depths, where no gold was ever before discovered, and its existence even by men of science stoutly denied, there is now brought up stone yielding as much as ten ounces to a ton, though anything exceeding five dwts. is supposed to be worth the expense of crushing. Besides gold, Victoria is rich in other minerals, especially silver, tin, and antimony. She is almost entirely deficient, however, in coal and in iron, and this deficiency cannot but exercise an important effect on her fortunes in the future. It is some consolation, however, to the Victorian patriot to feel that already this, the chief of the gold colonies, produces more by agriculture and by grazing than by mining, her corn and wool being of more worth to her than her gold. The total value of the agricultural produce of the colony is given by Mr. Hayter as £5,893,847 as compared with £8,684,218, the value of her pastoral produce, and £3,533,658, the value from mines. The value of the colonial manufactures in March, 1886, was estimated at £8,939,641. It is worthy of remark that during the last eight years the proportion in which the manufacturing produce has increased is that in which the pastoral and mining produce has diminished; a result which may perhaps suggest that a disturbance has been made with the natural course of colonial industry; the question, however, is one which the Victorians may claim to decide for themselves. Whatever is the ideal which they have fashioned for themselves, there can be no doubt that Victoria has advanced in wealth and prosperity—and if, perhaps, less rapidly than might have been expected from her natural advantages, yet at a rate which, judged by old standards, is still surprising.

The commerce of Victoria resembles, in respect of the articles interchanged, that of New South Wales. The difference in the imports and exports in the various colonies is partly natural and partly artificial, the supply of certain articles being stimulated by local laws, as well as regulated by physical conditions, while the demand for others is determined to a certain extent by local interference. The total value of the products of Victoria exported in 1886, including all that is produced or manufactured in the colony, was £11,795,321. Raw and natural produce figure, of course, prominently in this return—the two main articles being wool and gold, which between them make up more than two-thirds of the exports.

The United Kingdom is of course by far the greatest customer for Victorian produce, but there is a very considerable trade with the other colonies, and with the British possessions in the East. Victoria however imports more largely from the neighbouring colonies, than she exports to them. The total value of the imports into Victoria in 1886, was a little over 18,000,000. The shipping employed in the trade of Victoria, though less than that which goes to New South Wales, is greater than that to any other British possession, excepting Gibraltar, Malta, India, Ceylon, the Straits Settlements, and Canada. It was represented in 1886 by 3,735,387 tons. The finances of the colony are in a prosperous state, though at the first view the indebtedness of this as of the other states of Australia appears to timid economists at home to be excessive. Taking the clear and comprehensive statement published by the late Victorian Agent-General, Mr. Murray Smith, for our guide, we find that, before the late loan of £4,000,000 was placed in the market, the public debt of Victoria amounted to £22,000,000. At the present date the total debt is in round figures £30,000,000. This is a little more than £25 per head of the population, and equal to something less than four years' revenue. It is rather less than the average of indebtedness of the Australian colonies, though £3 a head more than the load which is upon the inhabitants of Great Britain. The remarks we have made on this subject under the head of New South Wales will apply with equal force to Victoria. These communities must not be judged in regard to their indebtedness by the standards of the old world. What they have pledged is a future of almost illimitable expansion, being themselves only in the very spring and bud of their growth. The question is not how much Victoria owes, but what she has to show for the money, and what is the prospect of repayment. The security which the creditors of Australia have is undoubted. Even applying that test to which the colonies have been so absurdly challenged, when they are asked if they could pay off the principal of their debt if called upon to do so, Mr. Murray Smith proves that Victoria is perfectly solvent—that her public works on which all her borrowed money has been spent, could be sold without difficulty for the amount of her public debt. As in the other colonies the public debt of Victoria, though large in proportion to the population, has not been incurred by foreign wars. It represents rather invested capital than loss, seeing than the money spent has been sunk in reproductive public works. The Australian colonies, as Mr. Murray Smith remarks, have had no enemies to encounter more formidable than kangaroos or rabbits. Their indebtedness, while it has afforded the capitalists of Great Britain a profitable means of investing their money, has enabled the borrowers to develop at an accelerated rate the natural resources of the country, and to make easier and cheaper their road to the waste lands of the interior. Up to the 30th of June, 1887, Victoria had spent £26,171,600 on her railways, of which 1,880 miles were open for traffic, and 250 more in process of construction. Of this sum £17,900,000 had been provided by loans, the remainder having been contributed out of the Victorian exchequer. After paying all expenses of working, the net balance in the railway account was last year £1,025,962, representing interest on the capital expended at the rate of 4·172 per cent. This is by no means an unfavourable return, considering that the original railway works were undertaken at a period when labour was comparatively dear, and the colony had but little experience of the requirements of the traffic. The amount of interest in the debenture capital being still in excess of the net receipts, it will be seen that the Victorian railways do not yet pay in a commercial sense, but there is reasonable ground for believing that they will do so before long. What is wanted is of course a large population to swell the traffic as well as to share in the burden of the expenditure. The indirect benefit to the colony of its railway system, now extending north, east, and west, in raising the value of the country lands, in giving facilities for the transport of the staple articles of produce, and in dispersing the people over new fields of industry, cannot be estimated in figures. Besides the railways, on which over £20,000,000 have been expended, the water-works, of incalculable value in a dry climate like that of Victoria, have absorbed more than £3,000,000 of borrowed capital, and a great portion of the new loan of £4,000,000 has been devoted to the same works, under the provisions of an excellent Act passed by the O'Loghlen administration. But, whatever may have been the errors committed by Victorian financiers in the past, and however fantastic may have been some of their fiscal ideas (on which it is no part of our duty to dwell), there cannot be any doubt that the financial position of Victoria is at present a sound one. "We are," says Mr. Murray Smith in conclusion, "an English community living under English laws, with English sentiments, proud, not only of our prosperity and progress but of our fidelity to all our monetary engagements; and it is not within the bounds of possibility that we should ever have any desire, or indeed any excuse, for evading the scrupulous and punctual discharge of any debt we have incurred or are ever likely to incur in the future." But the best natural guarantee which the English creditor can have of the perfect solvency of Victoria consists in the fact that the revenue for the year ending June, 1886, was £6,481,021, which is at the rate of £6 per head of the population, which is nearly three times more in proportion than is yielded by Great Britain, and twice as much as any other country in the world yields outside the Australian colonies. As in New South Wales, though not nearly to so large an extent, a great portion, about one-sixth of the Victorian revenue, is derived from land, a resource which, of course, will not be always available to the colonial financiers.



PART OF SOUTH AUSTRALIA,
SHEWING ADELAIDE ETC.

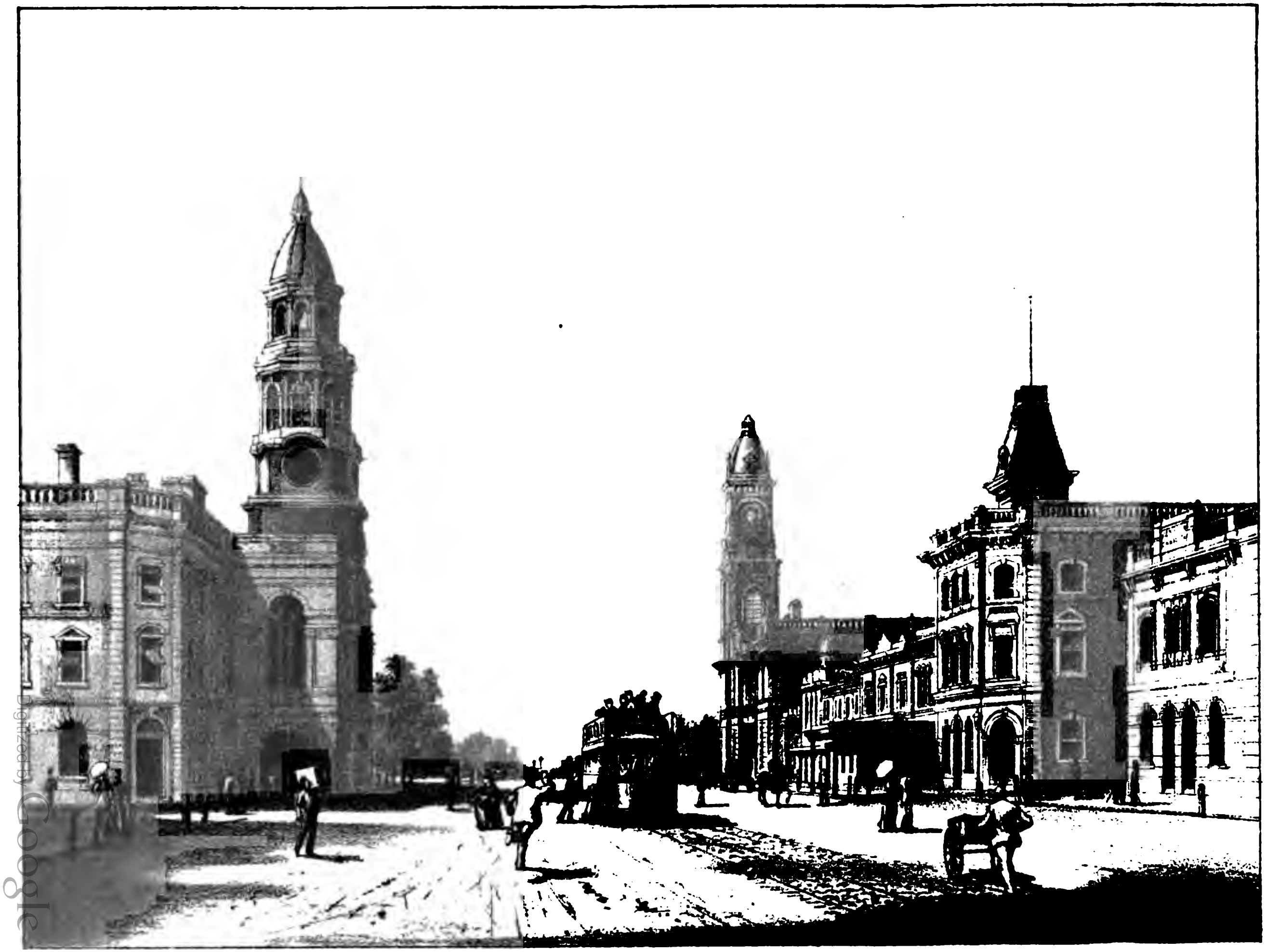
In all essential points Victoria resembles New South Wales in her political and social institutions. The Constitution has perhaps more of a popular element in the younger colony. The Upper House is elective in Victoria, and by recent reforms has been brought more into harmony with the Lower, which it is to be hoped will lessen the friction between the two. Whether the assimilation of what was intended to be the controlling second chamber to the popular assembly will not rather have the effect of setting up an antagonism between the two, is a point on which there is room for much difference of opinion. The latest change in the political situation indicates that Victoria has entered upon a period of repose, after her long fever of agitation. The State, undertaking duties far more numerous and complicated than those which devolve on the central government at home, makes bountiful provision for the moral and physical welfare of the community. The Melbourne University, which is handsomely endowed both by public and private munificence, was established within two years of the birth of the colony itself, and is open to youth of all denominations and of either sex. The professors are chosen from men who have made their mark at the English universities. The total number of students attending lectures was 444 in 1885, up to which date 955 had been admitted to degrees. The system of primary education is purely secular, costing some £600,000 a year. The total number of State schools in the colony last year was 1,803, with an average attendance of 120,000 scholars. Ninety-six per cent. of all the children in Victoria at the school age are now receiving education either in the public or private schools. The educational agencies in the shape of libraries and museums are also prominent among the institutions of Victoria, and are in extent and in wealth worthy to be compared with those of any country in the old world. The Melbourne Public Library, still unfinished, has cost £112,000 and contains 120,000 volumes. The National Gallery contains some 13,000 works of art, including oil paintings, sculptures, and engravings. There are a National Museum and an Industrial and Technological Museum. All these institutions are now liberally administered and more largely used by the people than similar ones in the old country. Finally, as in New South Wales, religion is free and all denominations upon an equal footing—the Church of England largely predominating in numbers, in wealth, and in influence.

SOUTH AUSTRALIA.

Adelaide, in the Gulf of St. Vincent, is the capital of South Australia. This colony has been unfortunate in its nomenclature. It is not the most southern of the Australian colonies, for nearly the whole of Victoria is south of it, and it extends to within a few miles of the most northerly point of Queensland. A more becoming designation for the colony, if its present anomalous distribution of the Australian territory is to be retained, would be Central Australia, for the heart of the continent is included within its dominions. The northern territory, with which the only practicable communication is by sea from Adelaide, was added to the old colony in 1863, in recognition of the labours of the South Australian explorer Stuart, who first penetrated through the centre of Australia. The original settlement of the colony dates from December, 1836, when Captain Hindmarsh was appointed Governor under the auspices of the South Australian Colonisation Association. The scheme of colonisation adopted was that of Mr. Edward Gibbon Wakefield, of which the leading principle was that the land should be sold at a fixed high price, the proceeds to be devoted to immigration. The success of the enterprise was marred in the beginning by the outbreak of a feverish thirst for land speculation. Land was bought up to an extravagant extent, and the colony flooded with immigrants in excess of the demand and out of all proportion to the means of settlement and the natural rate of growth. The result was a total collapse of the colonisation scheme within three years of its adoption. In a few years, however, the colony rose superior to the blunders of its founders, and as its agricultural resources became better known to the world, immigrants began again to resort to its shores. Up to the date of the discovery of gold in the eastern colonies, South Australia was preferred by settlers of a better class, who sought not so much a fortune as a home in the new southern world. The gold fever drew away a large portion of her labouring population to Victoria, but from this new disaster South Australia quickly recovered, and has eventually profited. Although the precious metal was not found within her borders, the copper mines of the Burra Burra, Moonta, and Wallaroo, were some compensation, and the local agriculturists benefited largely by the sudden demand for bread-stuffs from Victoria and New South Wales. In 1852 a sum equal to £2,250,000 was transmitted from Melbourne to Adelaide in payment for cereals, flour, and farm produce. In 1856, the colony was endowed with a Constitution on a basis similar to those of the other colonies, and since then its progress, though not "by leaps and bounds," has been steady and uninterrupted. In 1860-62, Mr. A. M. Stuart, the intrepid explorer, furnished by the munificence of certain South Australian merchants, made his famous journeys through the heart of the continent from south to north, reaching the shores of Clarence Straits in lat. 12° S. Since then a telegraph line has been carried across from Adelaide to Port Darwin, a distance of about 2,200 miles bringing Australia into communication with all parts of the world. This great work was executed, and is maintained, solely at the expense of the colony, being a striking proof of the intelligence and public spirit which animate the people of South Australia.

The boundaries of South Australia as now fixed are, on the north, the Indian Ocean, on the south, the Southern Ocean, on the east Queensland, New South Wales, and Victoria, and on the west West Australia. Roughly speaking the South Australian territory takes an oblong slice out of the middle of the Australian continent, with the greatest length from north to south (about 27 degrees of latitude), and a maximum width of about 1,000 miles. The total area of the old colony up to July, 1863, was 380,000 square miles. Since the accession of the northern territory the area has been increased to 903,690 square miles, or 578,361,000 acres, making this the second largest of the Australian colonies, about three times larger than New South Wales, and more than ten times larger than Victoria. Of this immense area, extending from the temperate zone to more than half-way within the tropics, by far the larger portion is up to the present time unexplored and unsettled. Of the country lying between the limits of settlement on the south and the shores of the rivers and bays opening into the Indian Ocean, nothing is known except along the routes traversed by the explorers Stuart, Mackinlay, Warburton, and Forrest, yet there is every reason to believe that it is of a far different character from that which it bore up to within a recent period. The old theory that Central Australia was either a vast stony desert or a shallow lake has long since been exploded. Every fresh journey into the interior proves that the extent of fertile land which has hitherto lain out of the reach of occupation is far greater than the most sanguine had ventured to hope a few years ago. The itinerary of Stuart tells us of innumerable streams and watercourses, running at least for a portion of the year, with grassy plains, trees, and scrub—in fact, of a country very similar to that within the settled districts—available, doubtless, even at present, for the depasturing of sheep and cattle, and fit to maintain an agricultural population at some future date. Some of the rivers which flow northward into the Indian Ocean run through alluvial plains of great fertility, which promise by and by to be the sites of sugar and cotton plantations. At their mouths is to be found generally good anchorage, and some are navigable for a considerable distance for vessels of small burden. So little is known, however, of the capabilities of this region that it is unnecessary to dwell at any length upon this feature of South Australia. Suffice it to say that in her northern territory South Australia has a potentiality of increase equal to that enjoyed by any country under the sun, for though it is true that the greater part lies within the tropics, the climate even up to the extreme north has been found to be salubrious, preserved by the dryness and elasticity of the Australian air from most of the dangers and inconveniences attendant on the life in the tropics for persons of European birth. There are at present only two inhabited townships in the northern territory, Palmerston and Southport, within twenty-six miles of each other, both on the shores of Port Darwin, a magnificent harbour second only to Port Jackson in extent and convenience. The former is the capital and the seat of a Government resident, with a population at the last census of 572 persons, six hotels, three banks, two or three churches, and a Government House of stone. Southport is the shipping place for the newly discovered gold fields at Gum Creek. According to recent advices the South Australian Government is about to form another settlement on the Roper River, which flows into the Gulf of Carpentaria and is navigable for 100 miles by large vessels. The total population of the new territory is now over 5,000, three-fourths of whom are Chinamen, either imported by the Government or attracted thither by the news of the gold discovery. Of that portion of the colony which lies outside of the tropical line it may be said that in its general feature it partakes of the physical character which is typical of the Australian interior. As might be expected over so vast a region, there is a great diversity of scenery. Of the settled districts the chief characteristics are the extensive plains, thinly timbered, the greater part of which is among the best agricultural land in Australia. Along the line of the continental telegraph the soil is bare, overgrown with "spinifex" (*Triodium irritans*), but capable with irrigation of producing fruit and grain in abundance. The mountain ranges are highest in the south-east, where they attain to a maximum height of 3,000 feet. Of the rivers the principal is the Murray, the father of Australian streams, which ends its long and sluggish course in Lake Alexandrina. There are two or three other large lakes in the interior, chiefly salt, of which Lake Eyre which receives the drainage of a vast area of territory extending far into New South Wales and Queensland on one side, Lake Torrens and Lake Gairdner are the principal. These large surfaces of water, otherwise of little advantage to the colony, tend materially to temper the aridity which is the chief character of the South Australian climate. In other respects the colony shares the reputation which all temperate Australia enjoys of a salubrity greatly in excess of that which is the portion of European or Asiatic countries under the same latitude. In respect of its rate of mortality South Australia stands fifth among all the southern colonies, but this is no sure criterion of comparative health, seeing that assisted immigration is carried on much more extensively here than in the other colonies, so that the health of the community is affected by other than causes arising out of purely local conditions. The total population of South Australia in December, 1886, was

ADELAIDE



KING WILLIAM STREET.

estimated at 312,758, of which in 1885 there were nearly 15,000 immigrants by sea, which gives a proportion of new comers to the residents larger than that in any of the other colonies.

The productions in South Australia are similar to those of the eastern colonies, the chief difference being that up to the present time gold has not figured conspicuously among the exports, while agriculture is perhaps in a more forward state, and certainly more systematically pursued. Wheat, wool, and copper are three of the principal sources of colonial wealth. In 1885, the total area of land under cultivation was 2,785,500 acres, of which 1,942,000 were under wheat, yielding a return of 14,621,755 bushels. Taking the average of the last few years, South Australia is still at the head of all the wheat growing colonies of Australasia, bread-stuffs forming its chief article of export. Next comes wool, which was exported in 1885 to the value of £1,500,000 sterling; and thirdly, copper, which, though it has experienced a severe depression, is now once more reviving. The total value of this metal exported from the colony from the beginning has been estimated at £16,000,000. One mine alone, the Moonta, has paid £1,000,000 sterling in dividends. In the older districts of the colony there has been no payable gold-field as yet discovered, but very recently there has come a report of valuable auriferous ground having been struck in the northern territory, and should it be verified, this new resource will help greatly to forward the development of the vast domain which at present South Australia seems puzzled how to turn to profit. The northern territory will doubtless be formed by and by into a separate colony, and it has a great future before it as a tropical plantation. We must not forget to mention among the industries which are characteristic of South Australia, that of wine-making. The climate and soil of the colony are very favourable to vine growing, and South Australian wines are already among those best known in England from this part of the world. They are strong and inclined to be heady, but with greater care and experience in the after process of racking and fining, we may expect them by and by to be as much esteemed abroad as they are already at home. The total annual produce from about 4,000 acres is 460,000 gallons.

From the financier's point of view South Australia is not so rich as some of her more go-ahead sisters of the east, but, considering that she has not yet attained her jubilee, her progress towards wealth must be reckoned highly satisfactory, and at a rate which, in any other part of the world than Australia would be considered extraordinary. The imports and exports together represent a trade of over £10,000,000 sterling per annum, the colony exporting at the rate of nearly £20 per head of the population, which is about equal to that of Victoria or

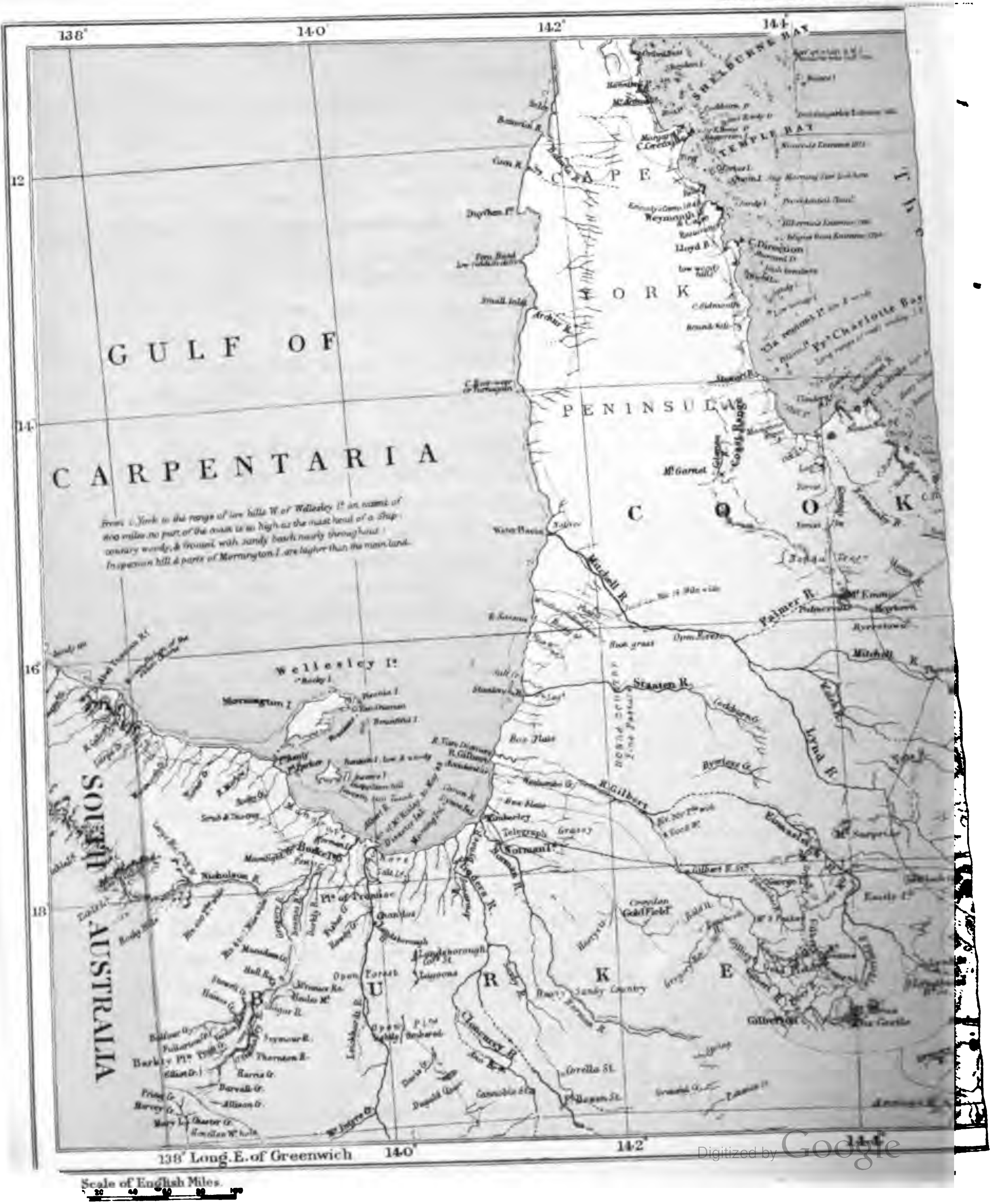
New South Wales. To one-half that extent South Australia is a customer of Great Britain, and a sustainer of the home industries. The revenue of the colony is a little over £2,250,000, and its public debt on the 30th June, 1886, amounted to £18,340,200. As in the other colonies, the whole of the money, borrowed from British capitalists, has been spent on railways and public works, greatly to the the advantage of the country in respect of the development of its resources. Of Government railways and tramways, there were 1,212 miles open in 1886, besides 439 under construction. There are 7,227 miles of telegraph wire at work, including the great trans-continental line to Port Darwin. Finally, there are in the local banks assets to the amount of £8,500,000, besides £1,650,000 in the savings-banks.

There is nothing exceptional to note of South Australia under the head of politics. Her politics follow generally the same course as in the other colonies, the tendency perhaps being to a greater steadiness in this more sobergoing community. Education receives the same attention as elsewhere among these young colonies. Adelaide, the capital, with a population of 45,000, exclusive of the suburbs, has a University equally with Sydney and Melbourne. There is now direct railway communication with Melbourne and with Sydney. There are 282 state, besides 162 other schools, under a purely secular system. Liberal provision has been made by an Act passed in 1875 for the endowment of national education by grants of land. In addition to all other attractions offered by South Australia is a system of immigration more liberal than that in any other colony, by which a land order is given to every qualified person who has paid his passage direct to Port Adelaide, and on landing in the colony, such land order being good to the extent of £20 for each adult, and £10 for each child at the Government Land Office. To illustrate the working of this system, the Agent General of South Australia points out that a family, consisting of a father, mother, and five children, would be able, by the assistance given, to meet the first payment of interest upon 900 acres of land at £1 per acre. In other respects the conditions of settlement are very liberal, and such as promise to make South Australia a favoured place of settlement for those who desire to form a new home in the southern hemisphere.

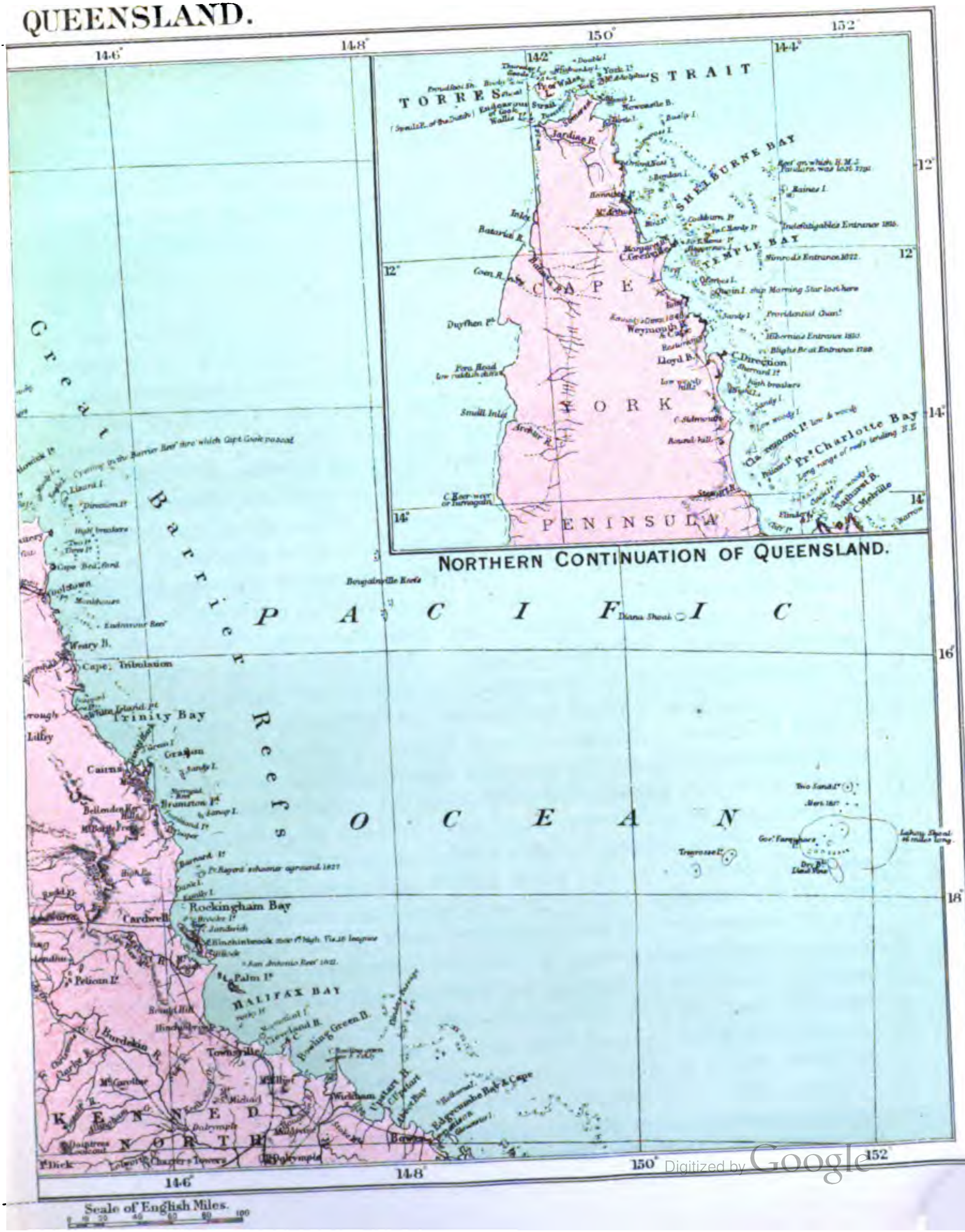
QUEENSLAND.

Although Queensland is not directly within the sphere of the Orient Company's enterprise, a great many passengers are conveyed to Sydney *en route* for that colony, and many more in future are likely to avail themselves of a means of communi-

NORTHERN


138°
140°
142°
144°
12
14°
16°
18
GULF OF CARPENTARIA
From C. York to the range of low hills W. of Wellesley Iˢ. in extent of 400 miles no part of the coast is so high as the mast head of a Ship; country woody & ground with sandy beach nearly throughout; Inspection hill & parts of Mornington I. are higher than the main land.
CAPE YORK PENINSULA
COOK
BURKE
SOUTH AUSTRALIA
SHELBURNE BAY
TEMPLE BAY
C. Grenville
Weymouth B.
C. Direction
Lloyd B.
Pʳ. Charlotte Bay
Batavia R.
Coen R.
Duyfhen Pᵗ.
Archer R.
C. Keerweer
Small Inlet
Mᵗ. Garnet
Coast Range
Mitchell R.
Palmer R.
Mᵗ. Emma
Palmerville
Ryrestown
Lynd R.
Staaten R.
R. Gilbert
Wellesley Iˢ.
Mornington I.
Bentinck I.
Sweers I.
Kimberley
Norman R.
Flinders R.
Leichhardt R.
Albert R.
Nicholson R.
Burketown
Pᵗ. of Promise
Croydon Gold Field
Gilberton
Mᵗ. Surprise
Cloncurry R.
Corella R.
Sandy Country
Open Forest
Barkly Pˡˢ.
Seymour R.
Thornton R.
Gregory R.
Mc Intyre Cr.
138° Long. E. of Greenwich
140°
142°
144°
Scale of English Miles.
20
40
60
80
100

QUEENSLAND.

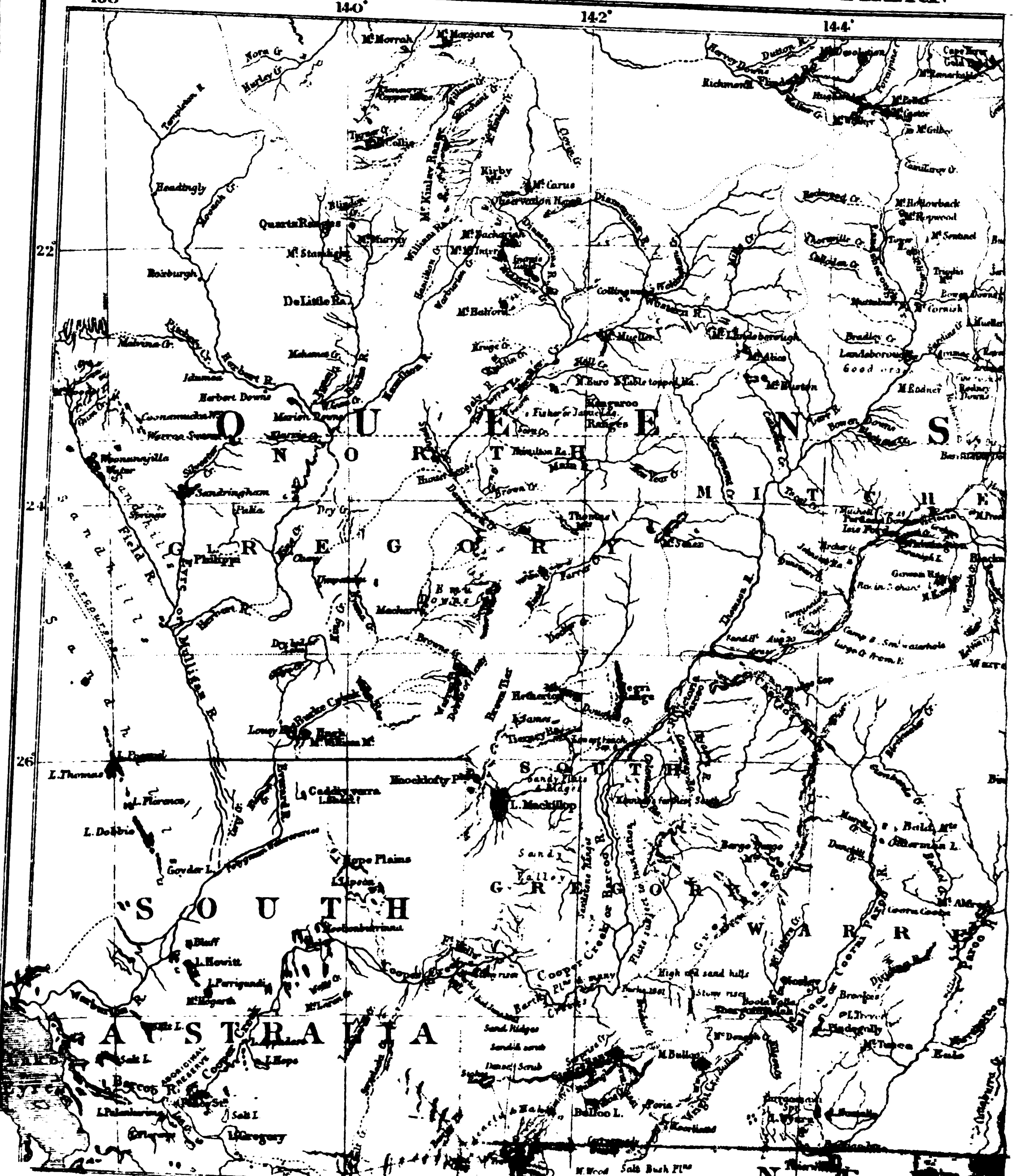


146°
148°
150°
152°
12°
14°
16°
18°
TORRES STRAIT
Endeavour Strait
Thursday I.
York I.
Newcastle B.
Jardine R.
SHELBURNE BAY
Raines I.
Indefatigable's Entrance 1816
TEMPLE BAY
Nimrod's Entrance 1822
Batavia R.
Coen R.
CAPE YORK PENINSULA
Weymouth B.
C. Grenville
Lloyd B.
C. Direction
Providential Chan.
Hibernia's Entrance 1810
Bligh's Bt at Entrance 1789
Duyfhen Pt.
Pera Head
Small Inlet
Archer R.
C. Keer-weer or Turnagain
Round hill
C. Sidmouth
Pt. Charlotte Bay
Claremont Is.
Pelican Is.
Bathurst B.
C. Melville
Flinders
NORTHERN CONTINUATION OF QUEENSLAND.
Great Barrier Reefs
Crossing in the Barrier Reef thro' which Capt. Cook passed
Lizard I.
Direction Is.
High breakers
Two Isles
Cape Bedford
Cooktown
Pt. Monkhouse
Endeavour Reef
Weary B.
Cape Tribulation
Snapper I.
Trinity Bay
Green I.
Grafton
Cairns
Sandy I.
Bramston Pt.
Bellenden Ker Hills
Mulgrave
Barnard Is.
Pt. Rapid schooner aground 1827
Dunk I.
Rockingham Bay
Cardwell
Brooke Is.
Goold I.
Hinchinbrook
San Antonio Reef 1821
Palm Is.
Pelican Is.
HALIFAX BAY
Round Hill
Cleveland B.
Bowling Green B.
Townsville
Burdekin R.
Clarke R.
Wickham
Upstart B.
C. Upstart
Abbot Bay
Edgecumbe Bay & Cape
Bowen
KENNEDY
NORTH
Dalrymple
Charters Towers
Pt. Dick
Bougainville Reefs
PACIFIC OCEAN
Diana Shoal
Two Sandy Is.
Mar's Is.
Gov. Farquhar
Tregrosse Is.
Lihou Shoal 46 miles long
Scale of English Miles.
0
10
20
40
60
80
100

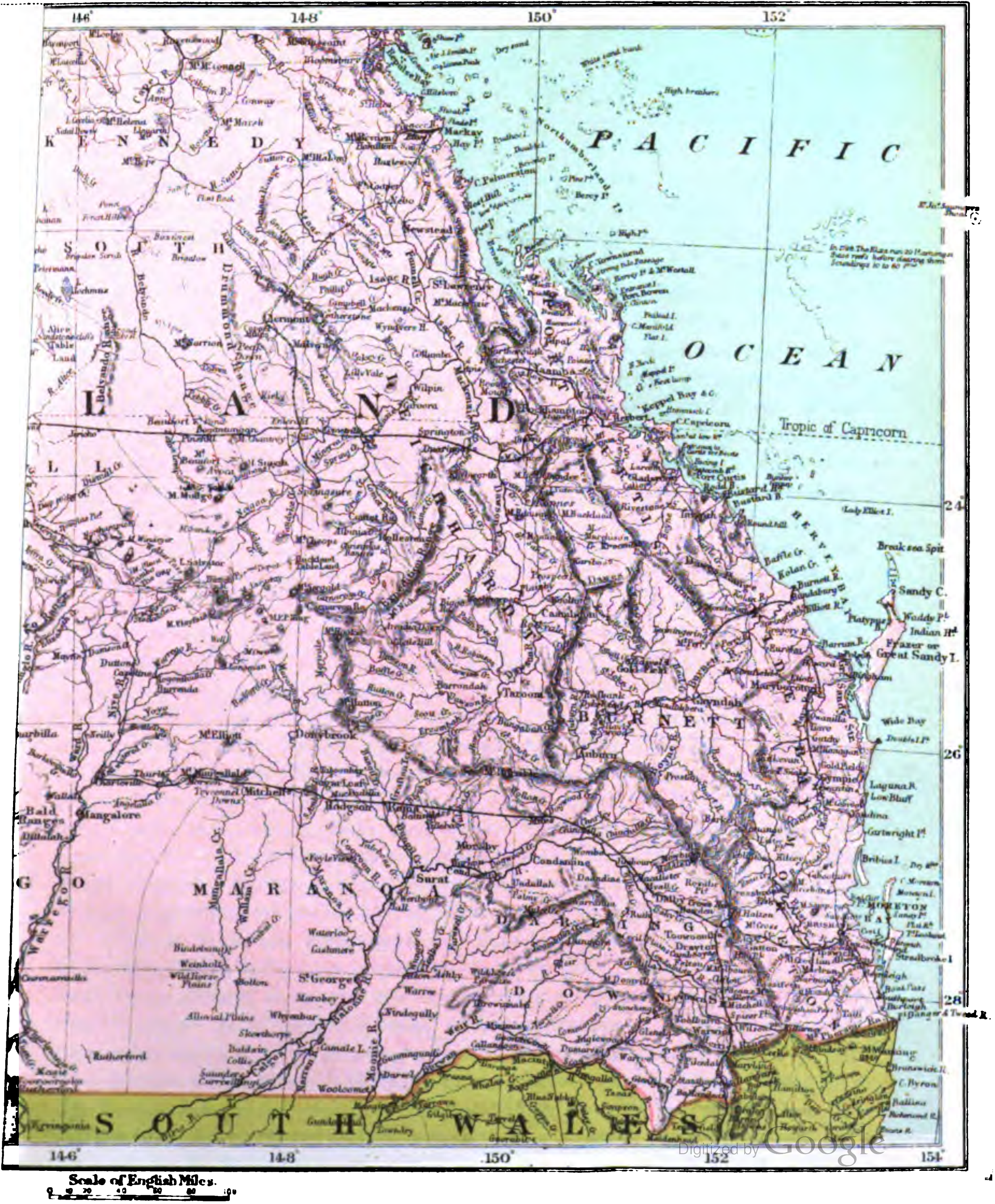
cation with Europe which is convenient and attractive and through cooler seas than that which the Queenslander enjoys by other routes. On her own account Queensland is far too interesting a portion of the Australasian continent to be omitted from this record. The youngest born of the southern colonies, she has been growing at such a rate as already to outstrip some of her older sisters, and she bids fair to equal the best of them in a few years more. Nothing in the history of British colonisation is more startling than the progress which has been made by this community in the struggle for existence. Originally discovered by Captain Cook in 1770, the sea-board was afterwards visited by Flinders, but it was not until the year 1823 that any attempt was made to explore the interior. In that year Surveyor-General Oxley, from Sydney, fixed upon the spot twenty miles up the Brisbane River which is the capital of the present colony. The country was occupied soon after by squatters, who here as elsewhere were the pioneers of settlement and civilisation, and in the search of grazing ground for their flocks and herds rapidly opened up the territory to the north and west. Up to 1859 it was part of New South Wales, and governed thence under the name of the Moreton Bay District. In December of that year it was started into independent life as the colony of Queensland. The line of division commences on the sea-board, in latitude 28° 10′ S. at Point Danger, and is taken along a range of mountains rising to 4,500 feet, called the Macpherson, then follows the westernmost course of the Dumaresq and MacIntyre Rivers till it touches the 29th parallel, then due west up to longitude 141° S. On the north, the Queensland boundary takes in a number of Islands, following the line of the Great Barrier Reef to the north-eastern extremity about latitude 9° 30′ S. containing the Talbot and Deliverance Islands and Torres Straits. On the west the colony is separated from South Australia by an imaginary line, formed for the greater part by the 138th meridian of longitude. The total area of Queensland is 668,497 square miles, making it the third in size of the Australian colonies, and five times and a half larger than the United Kingdom. Of this vast area, nearly one-half of which is within the tropics, about one-third remains up to the present time waste and unoccupied, but squatting stations already reach the South Australian border, and every year sees more and more of the wilderness conquered and made subject to man. Already the shores of the Gulf of Carpentaria have echoed with the footfall of the white man, and when the great Continental Railway, of which the concession has already been made to a syndicate of English capitalists is completed, an immense impetus will be given to the development of Queensland.

As might be expected from its spreading over so many degrees of latitude, Queensland is a country of very varied character, comprising the features of almost every country under the British flag. On the south we have a climate differing but little from that of the eastern sea-board of New South Wales. Even within the tropics, though the summers are hot and long, the dryness of the air and the sea-breezes near the coast make them far from unpleasant. Running along the coast at distances varying from fifty to two-hundred miles is a range of hills which forms the water-shed of the rivers flowing west and north into the great basin of Central Australia and into the Gulf of Carpentaria, and of the lesser streams of more tropical character which fall into the Pacific. Along this ridge is a table land of considerable width, where the cold is sometimes excessive in winter, and frost and ice by no means uncommon. The low lands on the sea-coast are visited by the South-East Trades, which mitigate the ardour of a heat which otherwise is less trying to the European constitution than that of similar latitudes in the old world and in America. In the far interior, though fever and ague are not unknown they are due entirely to the exposure and privation which have to be endured in these regions by the hardy pioneers. On the whole it may be said that there is no country in the world within the same latitudes, covering so wide an area of virgin soil, both so healthful and so interesting as Queensland. There is certainly no country in the world where an Englishman can live an outdoor life in all seasons and with such entire immunity from all physical ills, unless among these are to be included mosquitos and sand flies. Doubtless there are some avocations which cannot be pursued so well by persons of the British race in northern Queensland so comfortably as at home, but up to the present time the process of settlement has not reached that point so often foretold, when the white man would succumb to the tropical heat, and the wool of the sheep turn to hair. The tropics of Australia are not like the tropics anywhere else, nor is life subject to so many restrictions and drawbacks by reason of the heat as in other of our possessions within the same distance of the Equator. That the sun of Queensland is fiercer than that of Victoria makes itself manifest in the character of the local vegetation as compared with that of the south. The trees are of more varied shape and richer growth. In some of its forms the flora partakes of the luxuriant and bizarre character of Central America. The everlasting gum-tree is here not so prominent a feature in the landscape. There are many genera and species within the limits of the colony which have no representatives in the southern colonies, bearing considerable affinity, such as the *Dammara* and the Corypha palm, to those of the Malayan Archipelago. The *Bunya-Bunya (Araucaria Bidwellii)* is one of the most ornamental of forest trees. Scarcely inferior in beauty are the Moreton Bay pine *(Araucaria Cunninghamii)* and Moreton Bay chestnut *(Castanospermum australe)*, which are among the commonest of the

SOUTHERN


138°
140°
142°
144°
22°
24°
26°
QUEENS
NORTH
MITCHELL
GREGORY
SOUTH
GREGORY
WARREGO
SOUTH
AUSTRALIA
Mt. Morrah
Mt. Margaret
Nora Cr.
Harley Cr.
Templeton R.
Cloncurry Copper Mine
Tyner Cr.
Mt. Collis
Mc. Kinlay Range
Mc. Kinlay R.
Kirby Mt.
Mt. Carus
Observation Mount
Diamantina R.
Headingly
Moonah Cr.
Quartz Ranges
Mt. Stanleigh
Mt. Zachariah
Mt. McIntyre
Hamilton Cr.
Warburton Cr.
Williams R.
Mt. Ballord
Collingwood
Western R.
Boxburgh
De Little Ra.
Malvina Cr.
Pitchery Cr.
Herbert R.
Idamea
Herbert Downs
Mahomet Cr.
Burke R.
Hamilton R.
Marion Downs
Coonamulla Wells
Warrow Swamp
Mooneenajilla
Sandringham
Springs
Palia
Field R.
Sand Hills
Philippi
Mulligan R.
Eyre Cr.
Harvey Downs
Dutton R.
Mt. Desolation
Richmond
Flinders R.
Mt. Remarkable
Mt. Gilbey
Cape Torres Gold Field
Redcaped Cr.
Mt. Hollowback
Mt. Sentenal
Thorwille Cr.
Cornish Cr.
Bowen Downs
Mt. Cornish
Bradley Cr.
Landsborough
Good grass
Mt. Rodney
Rodney Downs
Mt. Mueller
Mt. Landsborough
Mt. Alice
Mt. Burston
Mt. Euro
Table topped Mts.
Kangaroo Ranges
Fisher & Jamie Ls.
Hamilton Ra.
Main R.
New Year Cr.
Brown Cr.
Dry Cr.
Thomson R.
Mt. Salem
Barcoo R.
Isis Downs
Archer Cr.
Alice R.
Camp & Small waterhole
large Cr. from E.
Dugald R.
Farrars Cr.
Mackarro
Browne Cr.
King Cr.
Hetherton
Pemra Range
Burke Creek
Lowry Pt.
Mt. William
Tierney Range
L. Machillop
Sandy Plains & Ridges
Sandy Valley
Knockfofty Pt.
Caddiyoorra
L. Tulpa
L. Phillippi
L. Thomas
L. Florence
L. Dobbie
Goyder L.
Pepperman Watercourse
Hope Plains
L. Lipson
Koolonburinna
Bluff
L. Howitt
L. Perrigundi
Mt. Hogarth
Warburton
Sand hills
Cooper Creek or Barcoo R.
Plains subject to inundation
Grey Range
Fort Bourke
Bulloo L.
Mt. Bulloo
Mt. Alfred
Coora Coolna
Paroo R.
Wilson R.
Nockatunga
Booln Wells
High and sand hills
Stony rises
Sand Ridges
Sandhill scrub
Dense Scrub
Salt L.
L. Hope
Aboriginal Reserve
L. Palankarinna
L. Gregory
Mt. Wood
Salt Bush Plns.
Tongowoko Swamp
Dumerilo
Bidbargilly
Mt. Tanca
Eulo
138 Long. E. of Greenwich
Scale of English Miles
20
40
60
80
100

QUEENSLAND.


146°
148°
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152°
154°
24
26
28
K E N N E D Y
S O U T H
L E I C H H A R D T
P A C I F I C
O C E A N
Tropic of Capricorn
B U R N E T T
M A R A N O A
D A R L I N G
D O W N S
S O U T H   W A L E S
Northumberland Is
Mackay
Nebo
Newstead
St Lawrence
Clermont
Springsure
Springton
Rockhampton
Keppel Bay
C. Capricorn
Port Curtis
Gladstone
Bustard B.
Hervey Bay
Breaksea Spit
Sandy C.
Fraser or Great Sandy I.
Maryborough
Gayndah
Taroom
Dawson R.
Burnett R.
Wide Bay
Double I. Pt
Gympie
Laguna B.
Low Bluff
Bribie I.
Moreton Bay
Brisbane
Stradbroke I.
Ipswich
Toowoomba
Drayton
Dalby
Warwick
Condamine
Surat
Roma
Mitchell
Mangalore
St George
Yeulba
Tambo
Dutton
Donnybrook
Westgrove
Mt Elliott
Charleville
Bald Ranges
Warrego R.
Maranoa R.
Balonne R.
Moonie R.
Weir R.
Condamine R.
Mt Lindsay
C. Byron
Tweed R.
Pt Danger
Brunswick R.
Richmond R.
Ballina
Tropic of Capricorn
Scale of English Miles.
0 10 20 40 60 80 100

characteristic trees of this region. The *Adansonia Gregorii*, Sour Gourd or Cream of Tartar Tree, is closely allied to the Baobab of equatorial Africa, with a girth out of all proportion to its height, forming one of the greatest curiosities of the vegetable world. There are many other trees valuable for timber, with properties medicinal and economical, as yet unknown, including furniture woods of the highest quality, such as the cypress *(Callitris)*, the tulip-wood, and the sandal-wood. The indigenous vegetable wealth of Queensland is scarcely yet thoroughly explored, and promises to be an inexhaustible resource in the future. In addition to its natural productions, there is no plant or fruit of the Oriental or Occidental tropics and the warmer temperate zone which may not be grown in Queensland. The pineapple and the banana grow along the lowlands of the coast as luxuriantly as in any part of the world. The sugar-cane and the cotton shrub thrive as well as in Jamaica or in Brazil. Side by side with the purely tropical fruits grow the orange and the vine, though, of course, these latter are found more at home in the cooler table-land of the interior. At Roma, in latitude 26° 37′, which was yesterday the extreme limit of settlement westward and the terminus of the Central Railway, itself a creation of the last dozen years, there are already orangeries and vineyards, producing according to Mr. Thomas Archer, fruit equal to any in the world, besides figs and peaches though of these latter it is reported that they were "cut up by severe frosts," an incident which will startle those who have been under the idea that Queensland is a country too hot for British settlement.

The population of Queensland by the census taken in May, 1886, was 322,855, but at the existing rate of growth it is now probably over 350,000. Of these, 11,000 are Chinese, including twenty-three females of that race, and 10,000 Polynesians. The number of the aborigines it is scarcely possible to reckon with any accuracy, from their nomad habits, but they are estimated at about 20,000. As elsewhere, they are receding and diminishing before the approach of the white man, though it is probable that the process of extinction will be longer delayed in northern Australia than in the south, owing to the impediments offered by nature to European settlements, the more genial climate, and the greater abundance of the indigenous means of life. In spite of the hot sun, and the more trying climatic conditions, the charms of life in Queensland are scarcely less than in any of the temperate colonies. The temperature of the air, though high throughout the year, is more constant than is usual in the same isothermal line. The thermometrical mean at Brisbane throughout the year is 69·9°. There is a well-defined rainy season along the coast, setting in about the end of February, the rainfall being in excess of that in the southern colonies. The winters are dry, cloudless, and most agreeable. The death rate in Queensland during fifteen years was only seventeen and a fraction per 1,000, which is very little higher than that of the healthiest Australian colony, and far lower than that of any other British possession outside the southern hemisphere, and from four to five lower than the normal rate of Great Britain. There are no endemic diseases, and the most dangerous epidemics are scarlatina and measles. Finally it may be said that even in the extreme northern district of the colony, by the banks of the rivers fringed with tropical growths, there has not as yet been developed any malaria.

As might be expected from the diversified character of the soil and climate, the products of Queensland are singularly various, and a catalogue of them would include almost everything which constitutes the wealth of a country, from wheat to sugar, from wool and gold to spices and *bêche-de-mer*. The total extent of land under cultivation up to the end of 1886 was 221,843 acres. The chief cereal grown is maize. About 50,000 acres are devoted to cotton, of which a very fine sample, equal to the best Sea Island, is produced on the coast. About 60,000 acres are under cane yielding last year 55,800 tons of sugar. Among the other agricultural exports figure arrowroot, tobacco, wine, pineapples, bananas, and oranges. The pastoral industry as yet is far in advance of the agricultural, and may be expected to take the lead for many years to come. The number of sheep in the colony is returned at nearly 10,000,000, of horned cattle 4,162,652, of horses 278,694. There were great losses in live stock during 1885, owing to the prevailing drought. The total value of the wool exported in 1886, in quantity over 28,700,000 lbs., was in round numbers £1,500,000. The mineral resources of the colony, though only imperfectly developed, include payable deposits of gold, copper, tin and coal. The value of the gold raised in 1885 was over 1,000,000 sterling, the number of persons engaged in the pursuit being 8,400, of whom one-half are Chinese, their average earnings being £113 a year, which is in excess of that in any other colony. From the first discovery in 1867 to the end of 1885 there has been produced in Queensland gold of the total value of some 17,000,000. Tin promises to be an article of scarcely inferior importance to gold, some of the richest deposits in the world of this metal having been discovered on the Wild River, in the Cook District, in the extreme north of the colony. Near Maryborough is reported to exist the most promising coal-field in Australia. Of stranger products are pearls and sea-slugs. The pearl fishery is actively pursued on the northern coast, and employs some 700 persons, chiefly Malays, Polynesians, and Chinese. In 1885 there were exported nearly 13,000 cwt. of pearl shell, and 5,000 cwt. of the sea-slugs or *bêche-de-mer*, a delicacy much esteemed in China, valued at from £40 to £90 a ton. All these are sources of revenue, direct and indirect, to the colony. The total exports in 1885 were of the value of £4,573,665; the imports, which comprise every description of manufactured articles, almost exclusively from Great Britain, amounting to a little over £6,000,000. The whole commerce of Queensland, which in 1841, according to Mr. Archer, was carried on by one small cutter trading to Sydney, now employs over a million and a half tons of British shipping. The national finances exhibit almost the same feature of plethoric abundance which is characteristic of the returns of Australian Treasurers. The revenue for the year ending June 30th, 1887, was £2,807,698, having more than doubled in ten years. The public debt in 1887 was £23,442,000. The fact that the colony has been enabled to borrow the sum it wants for the further promotion of its public works and the development of its resources at a trifle over 4 per cent., is the best proof that its credit stands high in this country, notwithstanding what appears to be the large amount to which it is already pledged. Upon this head it would be needless to repeat what we have said elsewhere in defence of the policy of borrowing to pay for reproductive works. Heavily as Queensland has mortgaged her future, there can be no doubt as to the soundness of the security and the honesty of the debtor. If much has been spent by the colony during its short life, there is much to show for it. There is an extensive system of national railways, with branches in all directions. Over 1,500 miles are already open for traffic, besides 500 under construction. The Southern and Western Railway, which is the longest and most important, in connection with the proposed grand trans-continental line, already extends over 400 miles from Brisbane. It is to be continued due west to Charleville, 100 miles further, from which point it will take a north-western course to the shores of the Gulf of Carpentaria, the terminus fixed upon being at Point Parker, which is within twenty days' sail of Calcutta. The prospects of this new line, not only as a channel of communication from one end of Queensland to the other, but ultimately of traffic between the Australian colonies and India, are most dazzling. The scheme, though it has received the sanction of the Queensland Parliament, is at present in abeyance. Another scheme scarcely inferior in practical importance is that of a line from Charleville to the New South Wales border, to join the railway systems of the southern colonies. The other principal railways constructed, or in course of construction, are the Central, from Rockhampton due west, parallel to the Southern and Western, which is already open for a distance of 320 miles. A third line starts from Townsville in Cleveland Bay to Charters Towers, the most important digging township, with a projected extension to Hughenden, 245 miles. There are several other shorter lines connecting the towns in the more settled districts. Some of these schemes are subject to alteration, and so rapid is the progress of the colony, that others may be more advanced as we write. The importance of these works as means of developing the trade and industry of the colony is nowhere more palpable than in Queensland, and in no other colony are the ultimate benefits realised likely to be so large. The gross earning of the 1,500 miles of railway open already are over £450,000 a year, leaving a considerable balance after paying the working expenses, though as yet, of course, the railway income is not equal to the annual interest on the money borrowed for their construction.

The constitution of Queensland is similar to that of the other colonies, there being two Houses of Parliament, the Council nominated by the Crown for life, and the Assembly, elected under a franchise more restricted than that in Victoria or New South Wales. From the character of the settlement, and the nature of the leading industries, it results that the system of government is somewhat less democratic than in the southern colonies, nor is a change of Ministry so common an incident in the political life of Brisbane as of Sydney or of Melbourne. In other respects the institutions, political and social, are such as distinguish English free-governed communities in the colonies proper. Having regard to the foreign and pagan element in the population, and to the scattered and diversified character of the thinly-peopled settlement, education is at least as well looked after as in the older colonies; and Brisbane, now a city of 75,000 souls, offers all the advantages, religious, social, and literary, to be expected of the capital of so rich and prosperous a state. The land laws are very liberal, and though by far the largest proportion of the soil, so far as it has been occupied, is in the hands of squatters, held under leases for grazing and cattle-rearing, the area which has been already selected for homesteads is 746,000 acres, leaving still open more than 25,000,000 acres for selection. The average price of land is 10*s*. 6*d*. per acre. Immigration is on the assisted system, and much encouraged, though the granting of land orders as an inducement to immigrants has been lately suspended. In all respects Queensland stands in the very foremost rank among the states which have been formed under the ægis of England, and is already one of the brightest gems which adorn the British Crown. Contemplating at once her marvellous growth and vigorous and exuberant youth we may well predict for the country a brilliant future.

WESTERN AUSTRALIA.

Nearer to Great Britain than any of her sisters, and placed as we might suppose, more directly in the stream of commerce, Western Australia, for reasons which it is not very easy to explain, has hitherto lain comparatively neglected and

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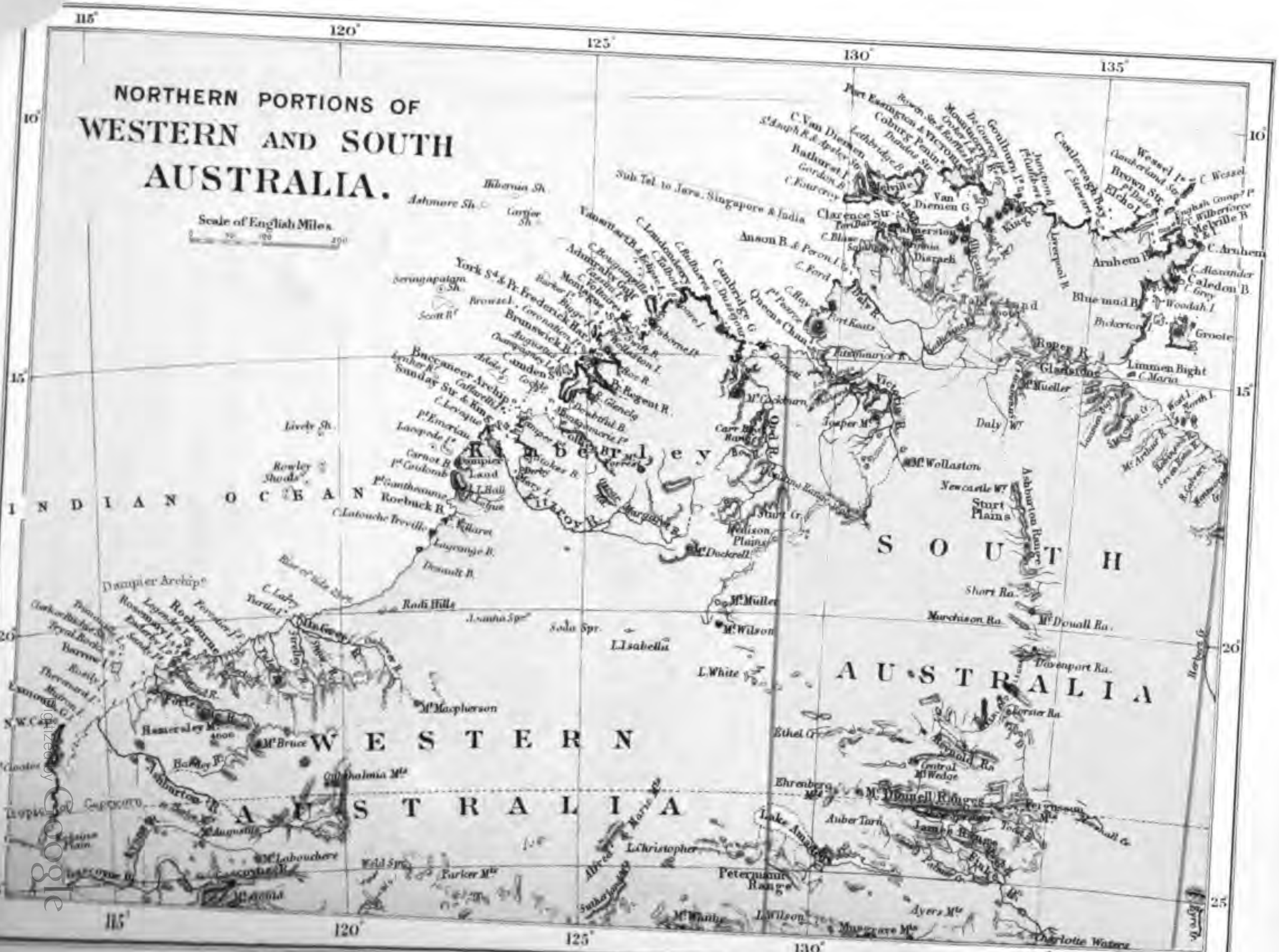
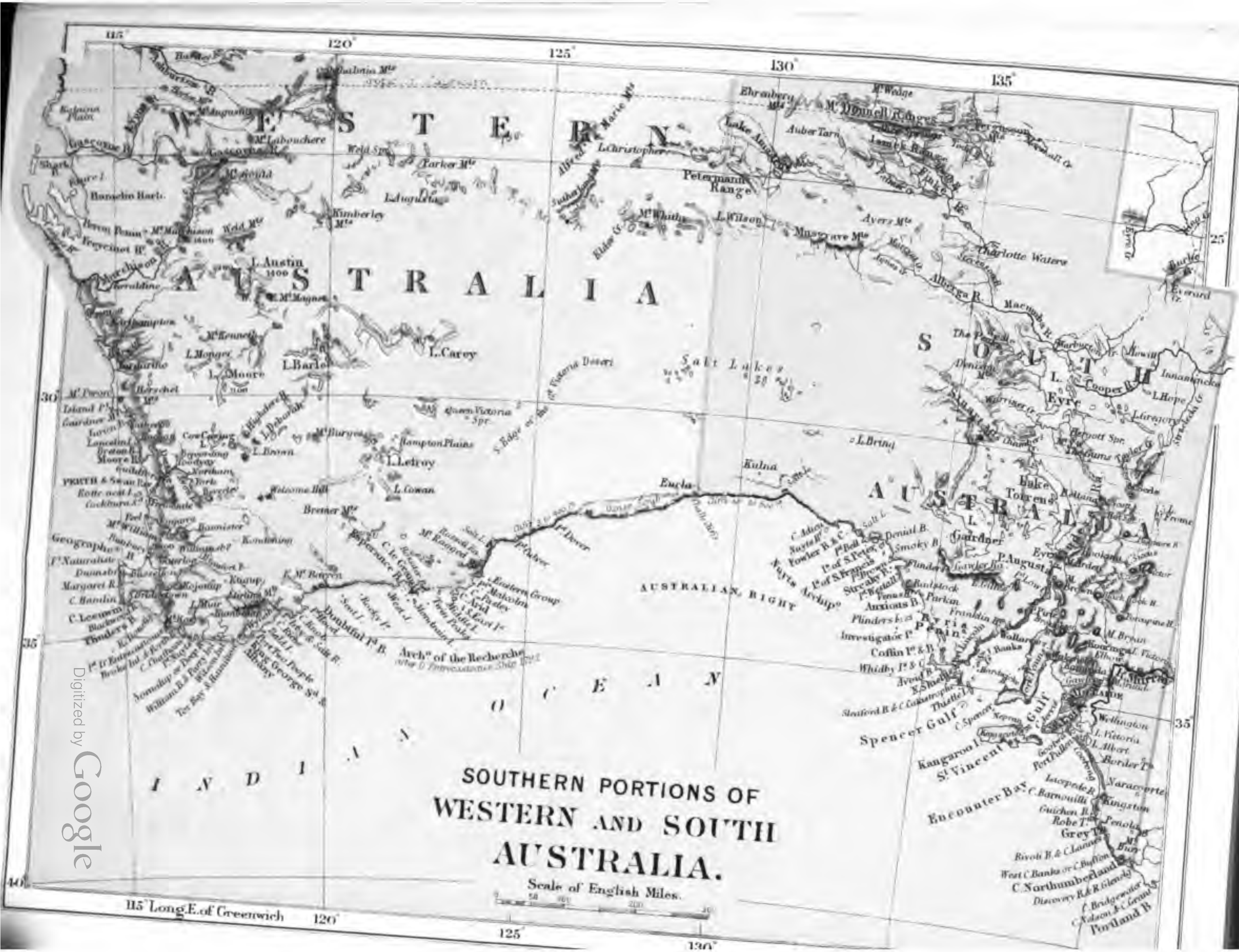
* Particulars on pages 418, 419 and 420.


NORTHERN PORTIONS OF
WESTERN AND SOUTH
AUSTRALIA.
Scale of English Miles
100
200
115°
120°
125°
130°
135°
10°
15°
20°
25°
INDIAN OCEAN
WESTERN AUSTRALIA
SOUTH AUSTRALIA
Kimberley
Hibernia Sh.
Ashmore Sh.
Cartier Sh.
Seringapatam Sh.
Scott R.
Browse I.
Lively Sh.
Rowley Shoals
Sub Tel. to Java, Singapore & India
C. Van Diemen
Bathurst I.
Melville I.
Clarence Str.
Van Diemen G.
Port Essington & Victoria
Coburg Penin.
Dundas Str.
Goulburn I.
Junction B.
Castlereagh Bay
C. Stewart
Liverpool R.
Wessel I.
C. Wessel
Brown Str.
Elcho I.
English Comp. I.
C. Wilberforce
Melville B.
C. Arnhem
Arnhem B.
C. Alexander
Caledon B.
C. Grey
Blue mud B.
Woodah I.
Groote
Bickerton I.
Limmen Bight
C. Maria
Roper R.
Gladstone
Mt. Mueller
Palmerston
Disraeli
Alligator R.
Anson B. & Peron I.
C. Ford
Daly R.
C. Hay
Pt. Keats
Queens Chan.
Fitzmaurice R.
Victoria R.
Jasper Mt.
Mt. Wollaston
Daly W.
Newcastle W.
Sturt Plains
Ashburton Range
Short Ra.
Murchison Ra.
Mt. Douall Ra.
Davenport Ra.
Forster Ra.
Reynold Ra.
Central Mt. Wedge
Mt. Donnell Ranges
James Range
Finke R.
Ayers Mt.
Musgrave Mts.
Charlotte Waters
Lake Amadeus
Petermann Range
L. Wilson
Auber Tarn
Ehrenberg Mts.
Ethel G.
Cambridge G.
C. Dussejour
Ord R.
Mt. Cockburn
Carr Boyd Range
Sturt Cr.
Denison Plains
Mt. Dockrell
Mt. Muller
Mt. Wilson
L. White
L. Isabella
Sola Spr.
Joanna Spr.
C. Londonderry
C. Bougainville
Admiralty Gulf
C. Voltaire
Montague S.
York S. & Pr. Frederick Har.
Brunswick B.
Camden S.
Collier B.
Buccaneer Archip.
Sunday Str. & King S.
C. Leveque
Pt. Emeriau
Lacepede I.
Carnot B.
Pt. Coulomb
Dampier Land
Pt. Gantheaume
Roebuck B.
C. Latouche Treville
C. Villaret
Lagrange B.
Fitzroy R.
Margaret R.
Glenelg
Prince Regent R.
Radi Hills
Dampier Archip.
Roebourne
Forestier I.
C. Lacy
Bedout I.
De Grey R.
Mt. Macpherson
Hamersley Mt.
Mt. Bruce
Fortescue R.
Ashburton R.
Mt. Augustus
Mt. Labouchere
Gascoyne R.
Lyons R.
Mt. Gould
Wild Spr.
Parker Mt.
L. Christopher
Alfred & Marie Ra.
Sutherland
Mt. Whitby
Barrow I.
Exmouth G.
N.W. C.
Pt. Cloates
Tropic of Capricorn
Ophthalmia Mt.



SOUTHERN PORTIONS OF
WESTERN AND SOUTH
AUSTRALIA.

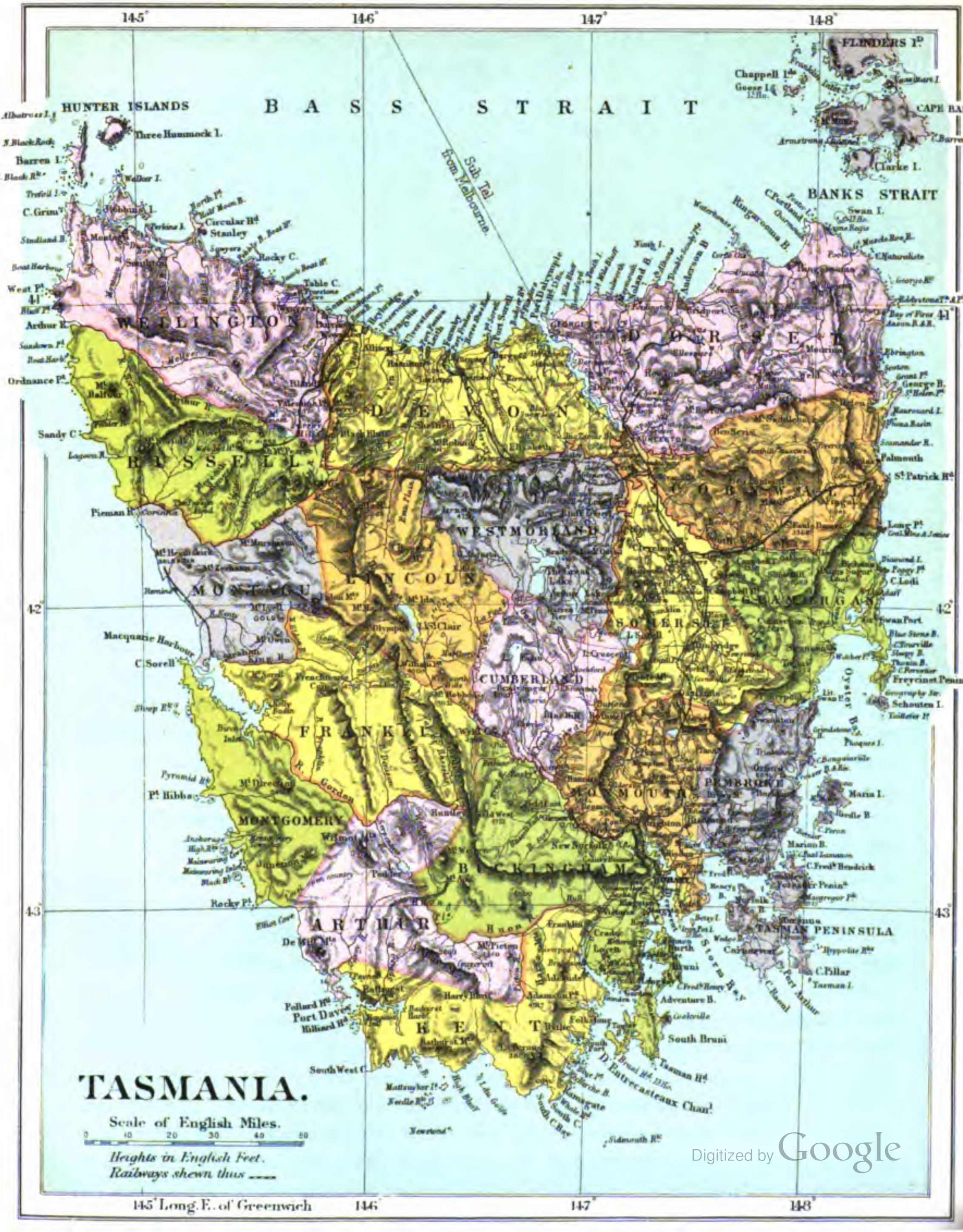
Scale of English Miles.

unknown. This western coast was one of the earliest portions of the continent to be visited by navigators, the Dutch having been there as early as the sixteenth century. Cape Leeuwin itsel was first sighted in 1622. Dampier sailed along the north-west coast in 1688, and the early buccaneers are supposed to have made more use of its bays and harbours, lying so conveniently near the great routes of commerce to the east, than they have chosen to tell. The French, in the early years of this century, seem to have paid particular attention to Western Australia, with some idea, we believe, of a settlement. It was not until 1829, however, that Captain Fremantle, in the *Challenger*, brought the first batch of English immigrants to the Swan River. For several years the colony had a sickly existence in the struggle against nature. There was no capital to develop the resources of the country, and no markets to which to carry the local products. All attempts to spread out into the interior were marred by a poisonous shrub which was fatal to sheep and to cattle, so that cultivation was limited to the region immediately round Perth, the chief seat of settlement, and Freemantle, the shipping port at the mouth of the Swan River. In 1850, the settlers, reduced to the direst straits, petitioned the Imperial Government to make Swan River a government settlement, and with the arrival of new blood there ensued a temporary period of prosperity. The Government expenditure gave a stimulus to the local trade and industry. The population increased by the arrival of the families of the first settlers, and immigration revived under the influence of the colonial prosperity. Western Australia was yet too feeble to do without the Imperial assistance it received in the shape of the money expended in the colony for the maintenance of the settlers. It had not been able to acquire sufficient strength to withstand the trials of freedom. Of late years there have been symptoms of growth, and there can be no doubt that eventually Western Australia will take that place among the southern communities which nature has marked out for her. Little by little the population has gradually increased. Many new industries have sprung up. The culture of fruit, and especially of the vine, promises great results before long; while the gold discoveries of the past few years are rapidly influencing the number and character of the immigrants.

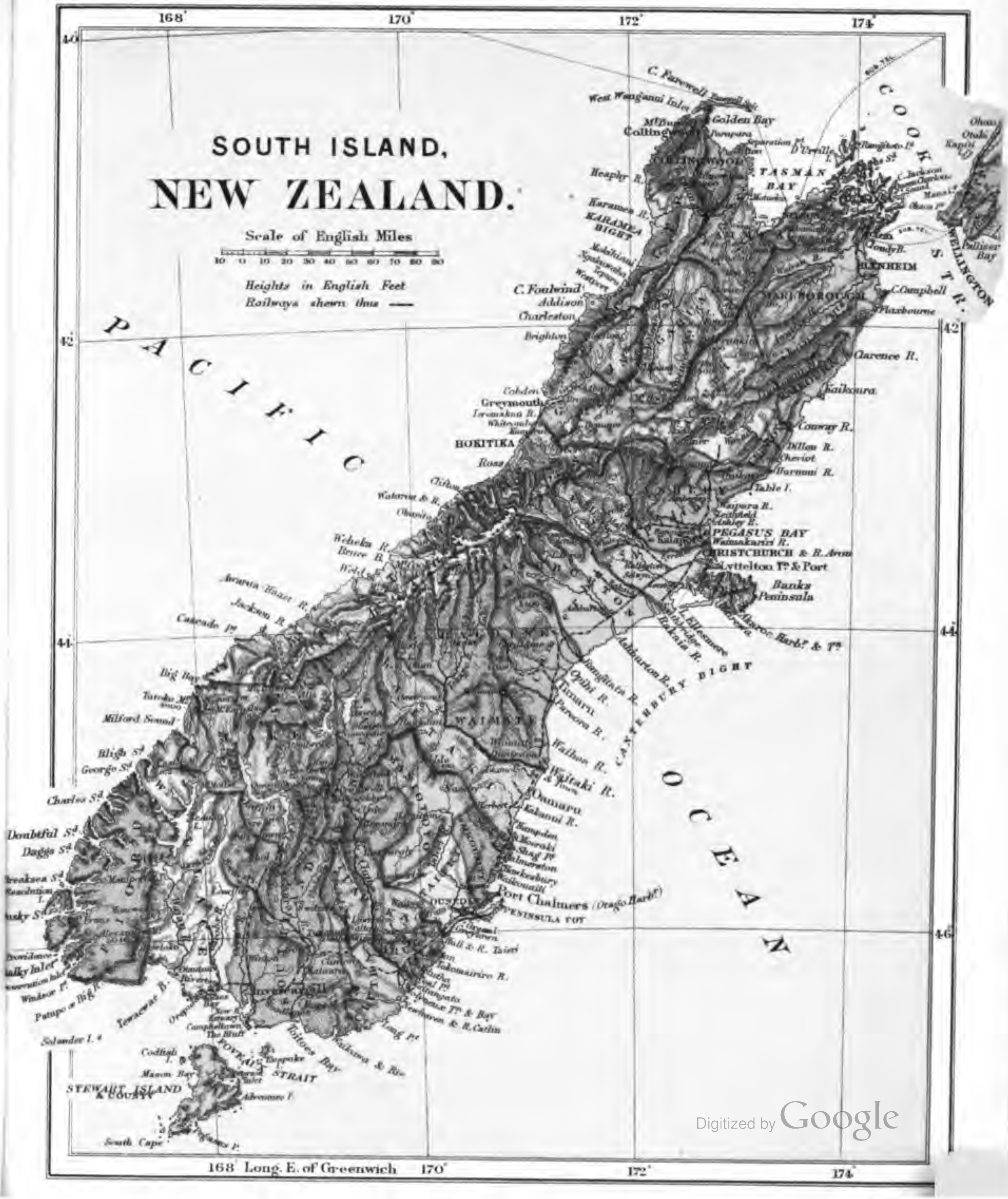
It will not be necessary to devote so much of our space to Western Australia as to the colonies we have already described. A glance at our map will show that the Colony occupies about one-third of the whole continent, including an area of over 1,000,000 square miles. It may be fairly presumed that this unequal distribution of the soil of the western half of Australia is only provisional, and that by and by new colonies will be carved out of these sparsely populated and loosely defined territories. Some idea may be formed of the magnitude of this one of our Australian colonies, at present forming the largest tract of land in one block still open to settlement under the direct authority of the Crown, if we remind our readers that its area considerably exceeds the total of British India, and is eight times larger than the United Kingdom. Of this immense territory, lying between the parallels of 35° and 13° 50′, S., it would be absurd to attempt to give anything like a general description. The greater part of it is still untrodden by the foot of civilised man, and it must be many years before its true character is made known. Beyond the sea-board and the settled districts in the south-west we have only the tracks of the various explorers to guide us as to the physical features of the country. Our knowledge of the interior, however, is rapidly extending through the discoveries recently made by Colonel Warburton, the two Forrests, and various other enterprising and intrepid men who have made this region the scene of their labours. The general impression which is left from their reports is that there is a much greater extent of country available for pastoral if not for agricultural occupation than had been suspected. The distinguishing features of the settled district round Perth and to the eastward are a flat, sandy plain, traversed by a range of palæozoic rocks from north to south, of moderate elevation and rounded forms, dotted with timber and scrub, with patches of rich land here and there. Sir Frederick Weld, a late Governor, describes Western Australia, so far as he had seen it, as "one vast forest," but that is to be taken as true only of the coast-region. The physical geography of this side of the continent is in striking contrast to that of the east, for here it is the fertile land from which the rivers descend into the sea, while there it is the rivers which have made the coast lands rich in their descent from the mountains. A great part of the interior on the north-east is a sandy desert, likely to be an effectual bar to any frequent communication overland between Western Australia and Queensland. On the north-west, however, along the course of the fine rivers Fitzroy, Glenelg, and Prince Regent, Mr. A. Forrest has discovered some very rich and well watered country, said to be 20,000,000 of acres in extent, fit for grazing purposes, as well as the cultivation of all kinds of tropical products. There are doubtless other tracts in the north equally valuable, whose development will be greatly assisted by the numerous excellent harbours and bays which abound on this coast. One important natural feature of Western Australia is the luxuriance of the indigenous woods. The timber trees, usually of the universal Eucalyptus family, are of great value, and mostly distinct from the Eastern species. The *jarrah* (*Eucalyptus marginata*), and the *kari* (*Eucalyptus colossea*), are reckoned next to teak in durability and fitness for shipbuilding purposes, and already furnish an important local industry. The former, which, in addition to its usefulness, is a tree (for a Eucalyptus) of singular beauty, is supposed to cover an area of 14,000 square miles. The white gum (*Eucalyptus gomphocephala*), the sandalwood (*Santalum persicarium*), and the raspberry-jam wood or myall, a species of *acacia*, familiar to pipe-smokers, are some other prominent West Australian trees. But, as in other parts of Australia, there is scarcely anything, the product of temperate or tropical countries, which will not grow in some part or other of this magnificent territory. The olive seems to be specially at home in this colony, and the vine grows as luxuriantly as anywhere else in Australia. The indigenous forms of animal life are, of course, the same here as in other parts of the continent, though found here as might be expected in greater abundance. Among these are to be reckoned the aboriginal Australians, who are more numerous and troublesome than on the eastern seaboard. The climate of Western Australia is reported to be even finer than that on the other side, being free from the hot winds which are the curse of Victoria and New South Wales, and though violent storms are not unfrequent, the long droughts and heavy floods of Eastern Australia are here unknown. The population of the colony, on the 1st of January, 1887, was estimated at 39,584, exclusive of aborigines. The Government is directly under the Crown, the local legislature being of the pattern of that which is in use in those Crown Colonies which have not yet emerged into responsible institutions, consisting of an Executive Council of officials, and a Legislative Council, part nominated and part elected. The revenue from all sources in 1886 was £388,564, and the public debt £1,286,000. The colony exports, to the value of about £500,000, wool, timber, pearls, horses, sheep, tortoiseshell, &c. One of the most healthy of the native industries is the cutting and sawing of timber, especially the *jarrah* and sandalwood, which is carried on by several joint-stock companies. There are two or three short lines of railway, one between the mining district of Northampton in the north, and the port of Geraldton in Champion Bay, 35½ miles long. Perth is also connected by railway with its port of Fremantle, and an extension of this line to Albany in King George's Sound, on the land grant system is nearly complete, and will render communication easy. The means of inter-communication, however, in Western Australia are as yet in a very backward state, nearly all the traffic being by sea along the coast. The chief want of the colony is population, and until a stream of immigration sets in, as doubtless will be the case when the great natural resources of the territory are made known to the world, there is very little hope of Western Australia emerging from the obscurity to which it has hitherto been doomed.

TASMANIA.

Tasmania, originally Van Dieman's Land,—the smallest, but not the least attractive, of the Australian colonies, next demands our attention. The passenger by the Orient steamer reaches it *via* Melbourne, from which port there is frequent and regular communication with Hobart and Launceston, the two chief towns of the island. Originally discovered by the famous Dutch navigator, Abel Tasman, in 1642, it was named by him Van Dieman's Land in compliment to his patron and father-in-law, Anthony Van Dieman, then Governor-General of the Dutch possessions in the East Indies. As other parts of the Australian coast, it was frequently visited by the French, with, there is reason to believe, some idea of settlement. Before they could make up their minds Lieutenant Bowen was despatched from Sydney to take possession of the island, and landed here in August, 1803. The following year the site of the new settlement was fixed, with admirable judgment, at the head of the noble estuary of the Derwent, on the spot since called Hobart Town, a name which was shortened on the 1st of January, 1881, to Hobart—one of the most beautifully located cities in the world, with a harbour vying with that of Sydney for safety, convenience and spaciousness. At the first start, the progress of Van Dieman's Land was slow, disturbed by many domestic troubles, and the stern rule to which the early settlers were subject, and distracted by famines, bushrangers, and an unusually ferocious and untamable kind of aborigines. In 1807 there was a general failure of crops. Corn was sold at £4 per bushel, and armed sentries were set to guard the wheat-fields. In 1820 the Merino sheep were first introduced into the island, where they have since thriven amazingly. Four years afterwards the island was made a colony, independent of New South Wales. Under the vigorous and enlightened administration of Sir William Denison, it made great progress, the public works dating from that period being of remarkable solidity and excellence. The discovery of gold on the mainland and the coincidence of the gold fever with the cessation of the large Imperial expenditure was attended with consequences most disastrous for a time to the young colony, but an exodus of the active male population of the island then set in, which has only ceased of late years as the local mineral resources have become better known and developed. The struggle for existence for Tasmania has been a severe one, pitted as she has been against her richer and more populous neighbours, but there is reason to believe that the crisis is past. A new era of prosperity has within the last two years dawned upon this, which long endured the


TASMANIA.
Scale of English Miles.
0
10
20
30
40
50
Heights in English Feet.
Railways shewn thus
145°
146°
147°
148°
145° Long. E. of Greenwich
41°
42°
43°
BASS STRAIT
BANKS STRAIT
HUNTER ISLANDS
Three Hummock I.
Albatross I.
Barren I.
Walker I.
C. Grim
Robbins I.
Circular Hd.
Stanley
Rocky C.
Table C.
West Pt.
Arthur R.
Sandown Pt.
Ordnance Pt.
Sandy C.
Pieman R.
Macquarie Harbour
C. Sorell
Sloop Rf.
Pyramid Rf.
Pt. Hibbs
Rocky Pt.
De Witt Mts.
Pollard Hd.
Port Davey
Hilliard Hd.
South West C.
Maatsuyker I.
Needle Rs.
Newstead
South C.
South C. Bay
D'Entrecasteaux Chanl.
Tasman Hd.
South Bruni
Adventure B.
Storm Bay
Bruni
Sidmouth Rk.
C. Pillar
Tasman I.
TASMAN PENINSULA
Port Arthur
Maria I.
Schouten I.
Freycinet Penin.
Oyster Bay
Swan Port
C. Lodi
Long Pt.
St. Patrick Hd.
Falmouth
George B.
Eddystone Pt.
C. Naturaliste
Swan I.
Clarke I.
C. Barren
CAPE BARREN I.
FLINDERS I.
Chappell Is.
Goose I.
Armstrong Channel
C. Portland
Ringarooma B.
Waterhouse I.
Anderson B.
Port Dalrymple
Sub Tel. from Melbourne
WELLINGTON
RUSSELL
DEVON
DORSET
CORNWALL
WESTMORLAND
LINCOLN
MONTAGU
GLAMORGAN
SOMERSET
CUMBERLAND
FRANKLIN
MONTGOMERY
PEMBROKE
MONMOUTH
BUCKINGHAM
ARTHUR
KENT
The Great Lake
L. St. Clair
Mt. Olympus
Mt. Ida
Mt. Zeehan
Mt. Heemskirk
Mt. Balfour
Mt. Dundas
Mt. Wellington
Ben Nevis
Ben Lomond
Mt. Picton
Hobart
New Norfolk
Bridport
Huon
Gordon
Franklin

reproach of being the most backward of the Australian group. During the last ten years the population has increased in a satisfactory ratio. It is now over 130,000. The island itself is almost as large as Ireland, with a soil quite as fertile and a climate incomparably finer. The total area is 24,330 square miles. It is divided from the mainland by Bass's Straits, which are about 120 miles across. Physically, it is a true portion of Australia, the animal and vegetable life corresponding precisely with that of the opposite continent, subject only to such modifications as are due to its more southerly position. Lying between the parallels of 40° 35′ and 43° 39′ S., Tasmania has of course a colder climate than any part of Australia. The influences of its sea surroundings make it more agreeable. There are no extremes of heat or cold, and no hot winds. The mean of the temperature at Hobart is 55·41°; of the three winter months, June, July, and August, it is 47°. For Europeans it is even healthier than that of the mainland, and for children especially it is a veritable Eden. The mortality among persons of all ages is shown by the low death-rate to be less than in any of the southern colonies. The island is renowned, among its other products, for its beautiful women, those born in the colony being remarkable for their good looks, even among the well-featured Australian race. The aboriginals are quite extinct—the last, a woman, having died in 1876. The general aspect of the country, both physical and social, is more English than that of any part of Australia. The homesteads, with their stone built houses, their trim gardens, well-kept lawns, and luxuriant hawthorn hedges, recall the scenery of the English counties, while the orchards delight the eye with all the fruits of the northern country, produced here in even a greater abundance and perfection. Nowhere are such apples and pears, strawberries and gooseberries as in Tasmania. The hop has found a congenial home on the banks of the Derwent. The sweetbriar attains to dimensions so gigantic as to have become a nuisance. The geranium is grown into hedges, five or six feet high. The cultivation of the English fruit has been developed into a considerable industry, and among the staples of the island are jams and preserves. In 1881 the total export of Tasmanian preserved fruits amount to 4,195,317 lbs., valued at over £100,000, in addition to 173,739 bushels of green fruit exported, valued at £55,345. During the height of the gold fever and for some years after, Victoria was chiefly supplied with vegetables, fruit, and garden stuffs from Tasmania, and though this branch of trade has almost entirely fallen off, owing to the greater attention which the Victorians have paid to their gardens, agriculture is still a main source of industry in the island. The construction of the railway from Launceston to Hobart and of the shorter line from the former town to the rich agricultural district of Deloraine, has done much to give a stimulus to the development of the local resources. These, however, are yet far from being thoroughly explored, owing to the scantiness of the population and the fact that hitherto the gold colonies have absorbed nearly all the youth and enterprise of Tasmania. The western side of the island is still occupied by vast forests a conspicuous tree being the myrtle or native beech *(Fagus Cunninghamii)*, which will have to be cleared before the land is available for cultivation. Among other important native trees are the well-known blue gum *(Eucalyptus globulus)* which grows to a height of 350 feet, with a girth 100 feet, in the southern counties, and the Huon pine *(Dacrydium Franklinii)* a beautiful furniture wood equal to bird's eye maple. The tree fern *(Dicksonia Antarctica)* grows to a great height in some of the mountain gullies, supplying the place of the palm in the Tasmanian landscape. In general it may be said that Tasmania is more thickly wooded, as well as better watered, than the colonies or the mainland. The Derwent, opening into the southern Ocean, is a noble stream, whose banks from Hobart to New Norfolk recall the scenery of the English lakes. This is now the habitat of the salmon (doubtful) and salmon-trout, whose introduction into southern waters has been the greatest feat of acclimatisation yet attempted. The common brown trout *(Salmo fario)* is also naturalised in several of the Tasmanian rivers, and attains to proportions which make it scarcely recognisable by the English angler — fish up to seventeen and eighteen pounds having been caught in the Esk and its tributaries. The greater part of the open country in the interior, rising into mountains 5,000 feet high, is better fitted for pasture than for tillage. It is here, among the recesses of Ben Lomond (15,010 feet high), that the unique marsupial feline, the native tiger *(Dasyurus maculatus)*, is still to be found, besides the hyæna *(Thylaccius cynocephalus)*, and that strange creature, the native devil *(Sarcophilus ursinus)*. In spite of these formidable enemies, now rare, and shortly to be extinct, sheep flourish exceedingly, there being nearly 2,000,000 of them in the island, yielding a wool of which some brands fetch the highest prices in the market. Next to wool, minerals are the chief export of the island, at the head of which is tin, very large deposits of which metal having been lately discovered in the Mount Bischoff district in the west. In 1885 the total export of tin was reckoned at £357,587. The yield of gold is steadily on the increase, the principal auriferous region being in the north. In 1885 the quantity raised from alluvial and from quartz was 37,000 ounces. Galena and silver lead ore is found in several places, and coal also, chiefly of the anthracite kind. This enumeration of the leading natural resources of Tasmania proves it to be at least as rich as its neighbours, and if the progress of the colony hitherto has been slow, it is chiefly due to the accidents which have favoured the larger colonies, especially the gold discoveries in New South Wales and Victoria. That at present the commercial condition of the island is a healthy



SOUTH ISLAND, NEW ZEALAND.

Scale of English Miles

Heights in English Feet

Railways shewn thus ——

one is proved by the state of the finances. The revenue in 1886 was a little over £600,000, which was in excess of that in any previous year. The public debt at the end of 1886 was £4,026,720, incurred, as in the other colonies, chiefly on account of railways and public works. The exports in 1885 amounted to £1,313,693. The government is on the usual basis of a bi-cameral legislature—the Upper House being elected on a more restricted franchise. In politics there is much quietude, and life generally is more uneventful, more placid, and more respectable, perhaps more dull, in this beautiful island than in any other part of Australia.

NEW ZEALAND.

Although included in the general term Australasia, the islands of New Zealand do not belong in any sense to the Australian system, from which they are altogether different in natural character, bearing to the Australian colonies none but a political affinity. Although a direct line of steamers between England and these islands has been recently started, one high road to New Zealand from Europe is still, and perhaps will for many years continue to be, by way of Melbourne and Sydney, and there are many reasons why passengers should prefer that, which if it is the longer is by far the more attractive route. The frequent and intimate intercourse which is maintained between New Zealand and Australia naturally brings that colony within the range of the countries served by the Orient steamers, even though the nearest New Zealand port is beyond their terminus. By far the larger portion of the traffic of New Zealand with the mother-country is carried on by the Eastern route, which has this further interest for Englishmen that every station and resting-place on it by sea is either British or under British influence. New Zealand, the antipodes of Great Britain and its analogue in the southern hemisphere, is in fact the last link in the long chain of empire which stretches across half the globe, either by the South Atlantic or through the Mediterranean and the Suez Canal. Few who travel for health or for recreation, having reached Melbourne or Sydney in their outward course, will be deterred from visiting that "Brighter Britain" now rising into greatness in the southern seas. Of the Australian colonies it may be said that they are alike in their general features—

> "——Facies non omnibus una
> Nec diversa tamen, qualem decet esse sororum."

New Zealand, however, is essentially different. It has nothing in common with

Australia, except its political constitution and its society, in which of course both are English—New Zealand, perhaps, more so than the others. The lands are as unlike as those of any two countries can be, separated by more than a thousand miles of deep sea. The fauna and flora are distinct, and the forms which nature assumes are strikingly dissimilar. In New Zealand there is a total absence of those bizarre and monstrous growths which distinguish the animal and vegetable life of Australia. There is not one marsupial, and of the animals we found on our coming it is doubtful whether any was indigenous, with the exception of the bat. The gigantic birds of the Dinornis family, yet alive when the Maories came over from the cradle of their race beyond the sea, have long since ceased to exist. The greater part of the feathered race now extant are peculiar to New Zealand, and are found nowhere else. Of the flora also we are told that two-thirds of the species are entirely confined to these islands. This is the leading fact about New Zealand which travellers have to realize, which is scarcely sufficiently understood by those who speak of these islands as "Australasia." New Zealand is a land unlike any of its nearest neighbours, no more Australian than it is South American or Malay. The climate of the islands, though varying, of course, greatly over so many latitudes, is totally unlike that of Australia. It is that of a milder Devonshire, with less humidity and more fine days. There is not so much sunshine as in Australia, but the air is more bracing, and the cold in the south sometimes severe. The mean temperature of the North Island for the year is 58·3°; of the South Island 52·1°. The difference between winter and summer is much less than in England. In Auckland, lying between two seas, there is much rain; and in Wellington much wind. The climate of Nelson and of Wanganui may be said to be perfect for the European constitution. In some parts of the country earthquakes are not unfrequent, and there is still considerable activity in some of the volcanic centres, especially at Tongariro, 6,500 feet high, in the lake district of the north. The southern alps are covered with snow all the year round. The first glimpse of the coast informs the voyager that he is here upon a new scene. The dark green woods, the lofty mountain peaks, the rich foliage, the strong colours in which earth and sea are painted, are singularly attractive, especially to those who have just left the stern black mountainous eastern coast of Australia. This is our "wonderland" of the south, at least as rich in marvels as that which is the boast of America—a land of which it is difficult to speak in language which shall not savour of exaggeration. In area about equal to the British Islands, New Zealand seems destined to repeat in the southern hemisphere that *rôle* which in the north has been filled by Great Britain, with the exception that there, remote from the

NEW ZEALAND.

MITRE PEAK.

mainland, there is no likelihood of wars to interrupt her growth, or enemies to dispute her pre-eminence. There are three principal islands of the group, extending over thirteen degrees of latitude, 34° 30′ to 47° 30′ S., embracing, therefore, a far greater variety of climates than the mother-country. The Northern Island, called by the natives *Te Ike i Maui* (The Fish of Maui), is by far the more fertile, though not the largest. The Middle or South Island, *Te Wahi Poenamu*, contains 55,224 square miles, the western coast being fringed by high mountains, the loftiest of which, Mount Cook, is 12,349 feet. South of it is Stewart's Island, 30 miles long and 25 broad. Besides these there are innumerable smaller islands along the coast, chiefly on the north and south, and an outlying group, the Chatham Islands, 360 miles away to the eastward, inhabited by a race presumed to be a remnant of the aborigines of New Zealand. The Maories, who inhabit the Northern Island almost exclusively, are immigrants from Polynesia, most likely from Samoa, who are supposed to have been driven hither by stress of weather some time in the early part of the fifteenth century. There are traditions pointing to Hawaiiki as their ancestral home. Their language and customs prove them to be, beyond a doubt, an offshoot of the great Polynesian race, springing from the same root as the Malays of the Archipelago. The islands were first discovered and named by Abel Tasman in 1642, who lost a boat's crew in an encounter with the natives on the western coast of the Northern Island. They remained unvisited until 1769, when Captain Cook in his first voyage landed at Poverty Bay on the east side. He also was unfortunate in his relations with the natives, and gave them a bad character for treachery which our subsequent intercourse with them has certainly not confirmed. The first white settlers were the missionaries, who, under the guidance of the Rev. Samuel Marsden, Apostle of New Zealand, founded an establishment in the Bay of Islands in 1814. The first lay attempt at settlement was made by the New Zealand Land Company, who sent an expedition under Colonel Wakefield in 1839 to purchase land from the natives; and in January of the following year the first batch of immigrants arrived in the *Aurora* at Port Nicholson in Cook's Straits, now Wellington, the capital of the colony. These events and the several private invasions by land speculators from Sydney forced the hand of the Imperial Government, which, with some reluctance, accepted the Treaty of Waitangi, by which the majority of the native chiefs made over the sovereignty of the islands to Great Britain. Auckland was selected as the seat of government and continued to be so until 1865, when Wellington was fixed upon as the capital. We need not follow the troublous history of the colony through its early stages. Unhappily that amalgamation of the races which at one time seemed likely to come about was frustrated through faults on one side and the other—faults chiefly of ignorance on the side of England, arising out of an over-solicitude to protect the natives, always sufficiently well able to protect themselves. After several campaigns, carried on with but little accession of glory to English soldiers, the long dispute between the white settler and the Maori, arising out of questions of land, was brought to a close when finally the conduct of native affairs was handed over from the Crown to the colony. The peace which has reigned for some years past between the colonists and the Maories is not likely to be again disturbed. The great and rapid increase of the white population and the decrease in the number of the natives has solved, in the most natural way, a question which at one time threatened the very existence of New Zealand as a dependency of the British Empire. In the fact that by the last census the European people inhabiting these islands exceeded 500,000, while the Maories numbered only 44,000, we have the best assurance that the further development of the colony is not likely to be arrested. The native difficulty has indeed solved itself, helped by the wise and patient firmness of the Government, which has for some years past pursued the policy of leaving the Maories, or such of them as hanker after independence, severely to themselves. Those Maories who choose to claim them may acquire all the rights and privileges of British citizens, on terms of perfect equality with white men. Besides two special representatives of their own in the Upper House of the Legislature and four in the Lower, the Maories, as ratepayers, have the same franchise as Europeans. In 1879, there were 6,686 natives on the electoral roll.

New Zealand has of late years taken rapid strides in the development of her resources. In population she now ranks as third largest of the Australian colonies, coming after, and increasing faster than, New South Wales. Though more heavily burdened in the race than any of her sisters, in consequence of the peculiar circumstances of her growth, of her natural difficulties through the population being scattered over so large an area, and of the native wars, which have done so much to thwart her progress, and which have left behind a painful legacy in the shape of a debt incurred for military expenses—a charge to which no other colony has been subjected—New Zealand has fairly entered upon the path of prosperity. The policy of successive Colonial Ministries has been a very bold and somewhat hazardous one, but there can be no doubt of its ultimate success. It is based on the principle of pushing on public works, and opening up the interior to settlement, and vigorously promoting immigration, with a view of meeting the extraordinary difficulties with which the country was saddled through the native wars, and the liabilities on account of them which were so abruptly thrust upon the local

Government by the Imperial authorities. This policy has entailed a public debt now amounting to over £30,000,000, showing a rate of indebtedness per head considerably exceeding that of any other colony, being nearly £60 for each member of the community. This is more than double the debt of any other colony, and nearly three times the National Debt of England, in proportion to the population. The best justification of the New Zealand financiers for what may seem their reckless management is to be found in the items which exhibit the rapid progress and the growing wealth of the colony. The year's revenue up to May, 1887, was £3,882,427, of which a far less amount than is usual in Australia is derived from land sales, seeing that there are no waste lands, properly speaking, for the Crown to dispose of, all the land sold to settlers having to be bought at an ever-increasing price from its Maori owners. The wealth of the colony is shown by its exports, which in the year 1886 were of the value of nearly £7,000,000 sterling. The principal articles exported were wool, constituting nearly one half of the whole in value, gold to the amount of £1,000,000 sterling, and agricultural produce about the same. Of Kauri gum, a special product of the New Zealand forests, there is exported an amount equal to more than £250,000 a year. Besides these, New Zealand is rich in almost every kind of animal, vegetable, and mineral product. The trade in foreign meat is beginning to assume large proportions, the New Zealand mutton, from its greater size and fatness, being preferred in the home market to the Australian. Among the native timber trees, are several of high commercial value, such as the Kauri (*Dammara australis*), which makes the finest spars in the world, and is one of the grandest of trees; the Totara (*Podocarpus totara*), next to Kauri in value, and even more generally useful to the settlers; the Pohutukawa (*Metrosideros tomentosa*), in great demand for ribs and knees in shipbuilding; the Puriri (*Vitex littoralis*), an ironwood; the Rimu, a black pine (*Dacrydium cupressinum*), esteemed as a furniture wood. Among the vegetable products of New Zealand are to be included all the fruits and flowers of England, besides many that are too tender for the British climate. Among the animals the indigenous fish play a prominent part, being more numerous and generally of finer flavour than those of the Australian seas, while the rivers are better adapted than those of Australia for the reception of salmon and trout. The *hapuka*, a species of cod, abounds off all the headlands, besides schappers, ling-fish, butter-fish, the halibut, the dorey, the flounder, mackerel, and pilchards. Oysters are found on every rock at low water, equal in flavour to natives, and crustaceans of superior character and of varied forms. Of acclimatised animals there are pheasants, partridges, and hares, the first so abundant in some parts of the northern island as to be a nuisance to the farmers. English song-birds have been also introduced, and thrive as well as everything English in this more genial Britain, the blackbird, the thrush, and the lark mingling their notes with the tui, the kakariki, a native parakeet, and the bell-bird. Of mineral treasures, besides gold, in which the country is perhaps as rich as any other in the world, having produced already over 10,000,000 ounces, of the value of £40,000,000 sterling, there is copper, of which several rich deposits have been found in various parts, and coal, which is of the finest quality and in great abundance, beside almost every other metal or stone which is used in the arts, including black lead, and statuary marble.

On this head we need say no more than that New Zealand is at least on a par with her neighbours, politically and socially. All her institutions are liberally supported, and there is, perhaps, even a more active spirit of citizenship in the colony, arising from its being more specially regarded as a settled home by the residents than in Australia. The jealousies in the early years of the settlement between island and island and province and province have been in a great measure abated, and there is more of a national tone awakened in the community. The abolition of the Provincial Councils in 1875, with their cumbrous system of administration through local Superintendents, has been followed by the best results, and one main cause of internal trouble has been removed. The public works are being prosecuted with great vigour, the development of the national railways especially being at a rate unsurpassed in any other British colony. In the North Island there were open for traffic in March, 1886, 629 miles of railway, and in the Middle Island 1,098 miles, the total expenditure on which has been nearly £13,000,000 sterling. The returns are estimated already to be equal to £3 7s. 3d. per cent. on the cost of construction. Owing to the peculiar nature of the country, the difficulties in the construction are greater than in Australia, while the service is more expensive from the great number of short lines and the various kinds of traffic. Still, considering the obstacles which have been overcome, there is no part of the world which has advanced so rapidly in the construction of railways, and where the benefits reaped have been so marked as in New Zealand. And it must be always understood that a very important means of inter-communication, seeing that all the principal towns are on the coast, is by sea. There are several local steamship companies whose vessels run at frequent intervals from north to south, along either side of the islands. In conclusion, we must say, to the credit of New Zealand, that there is no colony which pursues so active and enlightened a policy in regard to the supply of that which is the chief article of need in a young country, namely, population. The total estimated population of the colony on the 31st of December (exclusive of Maories) was 589,886. The proportion of births per 1,000 is 33·15; of deaths, 10·54. The

NEW ZEALAND.

LAKE TAUPO

MOUNT EGMONT

Maories, at one time returned at not less than 120,000 (they were probably never more numerous), were, according to a census taken in 1886, found to have decreased to 41,969. They are believed to be slowly dying out, and are no longer to be returned as any element of danger to the British community or as enemies to the colony. The facilities afforded to immigration are greater in New Zealand than in any of the Australian colonies; and the population is increasing more rapidly than elsewhere. For the working man it is impossible to conceive a better opening than is afforded by these rich and beautiful islands, the Britain of the South.

OCEANIA.

Fiji.—This account of the colonies of Australasia would not be complete without some notice of the new possessions which Great Britain has acquired, or is about to acquire, in the South Pacific, which, though hardly colonies proper, are likely to be of great value in the future as outposts of the Empire, and as centres of British civilisation. The Fijian group, including, with great and small over 250 islands, is one of the latest of England's acquisitions. They were first offered to the British Government by King Thakombau in 1859, but declined, and it was not until 1875, when the offer was for the third time made, that it was accepted. They now form a Crown Colony, subject to the direct rule of Downing Street, and have been administered hitherto with some success on the novel principle of maintaining the chiefs in their tribal authority, which is enforced by law. The islands lie between 15° and 22° south latitude, being scattered over an area of ocean 300 miles from east to west, and 200 from north to south. The total extent of territory is about 8,000 square miles, or nearly 5,000,000 of acres. The largest island, called Viti Levu (big Fiji), is about a hundred miles long by forty broad. It contains mountains 5,000 feet high, and though not equal to some others of the group in fertility, possesses a splendid harbour, Suva, to which has been lately transferred the seat of government from Levuka. The islands are rich in every kind of tropical produce, the principal articles of cultivation being cotton, sugar, and coffee. Cocoa-nuts occupy 16,350 acres, and form with the product *copra* an important article of commerce. The climate is, for the tropics, remarkably healthy and agreeable, the fierce rays of the sun being tempered by the perpetual trade winds. The white population at the end of 1884 amounted to 3,513, the natives at the same date being estimated at 115,635, besides half-castes and Polynesian labourers. The Fijians are a well-made, good-looking race, and though an unflattering report has been given of their moral habits, they are peaceful and tolerably industrious. Once inveterate cannibals, they have now for the greater part become converts to Christianity, and are of an exemplary severity in the performance of their religious functions. The system of administration introduced by Sir Arthur Gordon, the first Governor, while it protects the natives very carefully in all their rights, feelings and customs, is, perhaps, not calculated to develop the colony as a British possession. However, the islands continue to have much attraction for European settlers of a certain kind, and a good deal of capital has been laid out in the growth of the staple products, cotton, sugar, and coffee. Of the first there were exported in 1885 about 300 tons, valued at £35,100. Since then the product of cotton has greatly fallen off, the attention of the planters having been turned rather to the other two, the export of sugar having increased from 96 tons in 1875 to over 10,000 tons in 1885. *Copra*, the desiccated kernel of the cocoa-nut, is one of the principal articles of commerce in Fiji, the quantity exported in 1885 having been 5,415 tons, of the value of £67,076. The total revenue of the colony in 1885 was £91,522. Levuka is the largest port, but Suva is now the capital, and the seat of government. Three hundred miles to the north-west, not belonging to the Fijis proper is the little volcanic island of Rotumah, which was attached to the colony, in response to a petition of the native chiefs, in 1880. It is fertile and well cultivated, the inhabitants being superior to Fijians in moral character and in capacity for civilisation. These islands, however, cannot be regarded as a colony in the sense that New Zealand and Tasmania are colonies, and can never become the home of a British race. Recently there has been considerable dissatisfaction with the system of government administered by Sir Arthur Gordon's successor, the results of which have been satisfactory neither in cultivating a better feeling between the Europeans and natives nor in advancing the material interests of the colony. Trade and industry have been at a standstill. The growth of the chief islands products has ceased to be remunerative. The great decline in the price of sugar in the British markets, the consequence of the bounty system in some of the European countries, has paralysed the chief Fijian industry. While the amount of sugar exported last year from Fiji is more than twice as great as in 1853 it is valued at only a small percentage more. The introduction of coolies from India, in the place of Polynesian labourers, the supply of whom has been very much curtailed of late by the obstacles thrown in the way of immigration by philanthropic legislation, has been beneficial to the material interests of the colony, but the Indian coolie, for whom £6 per head has to be paid to the government by the planter, is still an expensive article, and it may be questioned whether in a falling market for all colonial produce and with the great competition for Indian labour on every side, the Fijian settlers will be enabled to avail themselves to any great extent of this resource. The public revenue had fallen considerably during the last four or five years, and can no longer be squared with the expenditure. It is no wonder, therefore, that an agitation should have been started for the annexation of Fiji to the colony of Victoria. There can be no doubt that such a step would greatly promote the interests of the white settlers and lead to the material prosperity of the islands.

New Guinea.—The latest of our acquisitions in the southern hemisphere is that territory somewhat vaguely indicated as the southern coast of the great island of New Guinea, up to the point claimed by the Dutch. The circumstances under which the Imperial authorities have been committed to this new extension of the British domain are somewhat peculiar, though not entirely without parallel in the annals of colonisation. For some years past projects for the formation of a settlement in that portion of New Guinea which is not claimed by the Dutch, namely the eastern half, from the meridian of 141°, have been familiar to the Australian public. In 1864 a company was formed in Sydney with that object, but failing to obtain the sanction of the Imperial Government, the scheme came to nothing. In 1872 a party of miners and other adventurers started to "prospect" the island for gold, but their vessel, the *Maria*, was wrecked on the Barrier Reef, and the survivors brought back to Sydney by Captain Moresby in H.M.S. *Basilisk.* In 1874 Sir Henry Parkes, the Colonial Secretary of New South Wales, proposed to found a British colony on the island, but Lord Carnarvon did not approve of the project. The year following a large meeting of merchants and traders was held in Sydney, at which resolutions were passed in favour of annexation. A New Guinea Association was formed in London, under the auspices of Lieut. Armit, which being discountenanced by the Imperial Government, fell through, an intimation however being conveyed to the Australian Governments through the Secretary of State that the Home authorities might be inclined to take a favourable view of any future scheme of settlement on the island provided the colonies would contribute to the expenses. In 1878 New Guinea was again visited by gold prospecting parties, who came back with an unfavourable report of its auriferous capabilities. English missionaries have for some years past had establishments in the eastern portion of the island, with Port Moresby as the centre of their operations. Their report of the character of the coast natives is more favourable than that which had been given by the earlier navigators. So far as the English rights to the eastern portion of New Guinea are concerned as against any other European nation, they seem to have been secured as early as 1846, when Captain Yule, of H.M.S. *Bramble*, took possession of the southern coast in the name of Her Majesty. The prospect of a foreign maritime power obtaining a footing in this part of the island of New Guinea, which is only some seventy or eighty miles distant from the most northern point of Australia, and of thus holding the keys of the road through Torres Straits, is of course one which the Australian colonies could not be expected to regard with complacency. The process by which Great Britain has finally acquired an interest more or less definite in New Guinea is one which can scarcely be regarded as creditable to the national diplomacy, or calculated to strengthen the bonds of union between England and her colonies in Australasia. This is a subject. however, of which it scarcely falls within our province to speak. The circumstances under which, after leading the Australian colonies to believe that New Guinea, or at least that portion of it not belonging to Holland, had been safeguarded against any European power, the Imperial Government have allowed the northern sea-board to fall into the hands of Germany, will be familiar to most Englishmen, and will certainly never be forgotten by the Australians. How much has been retained, and by what tenure it is to be held, are points in which there is yet so much uncertainty that it is scarcely possible to speak of the value of our new acquisition. What is certain only is that, after much hesitation and delay, the British Government have finally made up their minds that the sea-board of New Guinea, from the 41st degree of E. Longitude eastward, shall be not merely under English protection, but annexed to the empire. At first, by some strange omission or excess of timidity, only the main land on the south coast was claimed, but since then, owing to the remonstrances of the Colonial agents and the strong feeling roused in Australia, the Imperial Government have been induced to include the Louisade and the D'Entrecasteux groups, together with various outlying islands and capes, within their new dominion. For the present, therefore, it may be said that England has secured for herself not only that side of the New Guinea coast which most nearly borders on Australia, but the most valuable and important portion of the island. How much farther the English dominion in Oceania is to be carried, and what steps are to be taken, in conformity with the universal sentiment of the Australian colonists, to protect the British nationality and the British power in the South Seas against the encroachments of other European nations, are matters on which we need not speculate. There has been made, however, a very material addition to the possessions of Great Britain in the Southern Hemisphere. From the newly-awakened spirit of German enterprise in these seas there is not much either to be hoped in the way of commerce or feared in the way of danger by our own colonists. Such use as can be made of these islands can best be made by England from her existing possessions in Australasia. It is doubtful, however, whether, in any true sense, New Guinea can become a British colony, or even a plantation where white men can extensively engage in the cultivation of tropical products. The climate, except in the high lands, is highly detrimental to Europeans; the natives are numerous, and apparently possessed of a very keen sense of the value of their lands. Very recently there have been some valuable and interesting discoveries of fertile and salubrious tracts in the interior, watered by several large rivers, said to be uninhabited. Of such trade as may be developed in the island, it is probable that Port Moresby will be the centre.

Under this head of Oceania we cannot omit to make reference to what is a burning question in Australia and in New Zealand, namely, the extension of the French dominion over the New Hebrides, in flagrant violation of a positive engagement with England. By a Convention made between the two Governments, at the instance of the French in 1878, England and France bound themselves reciprocally to respect the independence of the New Hebrides, and to refrain from annexing any of the islands included in the group. Such a stipulation was at that time resented by the Australian colonists as an invasion of their just rights, and limitation of their legitimate prospects. France and England were not equal parties in such a transaction. France had no claim whatever in the New Hebrides, which did not touch any part of her dominion. The position of New Caledonia, a French penal settlement, could not be compared with the position of Australia towards the New Hebrides. which lay midway between two British colonies, which was first discovered by British navigators, which was chiefly occupied by British settlers, and had been made fit for occupation by British missionaries. Therefore, the convention of 1878 was all in the interest of France, who gave nothing in return for the guaranteed neutrality of the islands. The encroachments recently made by the French in the New Hebrides, and the apathy and seeming indifference with which they have been regarded by the Imperial Parliament, have given great and just irritation to the Australian colonists. It is not only that, they fear that the New Hebrides will be made a receptacle for French convicts and *recidivistes*. That is bad enough, considering what Australia has suffered already from the penal establishment at New Caledonia. But it may be that the French do not intend, as they do not need, to use the New Hebrides as a receptacle for convicts. Such an assurance by no means removes the objections of the Australians to the French occupation. The New Hebrides are placed exactly in the fair way between Sydney and Fiji. They consist of several rich and fertile islands, with more than one excellent harbour, and their possession by a maritime power would become in time of war a very serious danger to the Australian colonies and to British shipping and commerce in these seas. Sandwich Harbour, the site of the late French occupation, is one of the best in the Pacific, and might be turned into a most convenient fortified post and coaling station. These are some of the reasons why the Australians objected to the French occupation, and insisted upon the Convention of 1878 being strictly carried out. The question has now been happily settled by the evacuation of the islands, and the withdrawal of the French pretensions to their protectorate.

GENERAL SUMMARY.

Having brought our passengers to the furthest verge of British dominion in the southern seas, it may be necessary to supplement our account of the various colonies by a general description of the leading features of Australian life and society. There are perhaps few who require to be told in these times, when the voyage to Australia has, through the enterprise of the Orient Company, become an achievement needing no great heroism to accomplish, and indeed somewhat easier and quicker than a voyage across the Atlantic used to be a couple of generations ago, that life in an English colony is pretty much what life is at home. The traveller who lands in Australia finds himself, though in a new world, amid scenes which are familiar, surrounded by sights and sounds not very unlike those he has left behind in the old country. He will, perhaps, not be prepared to see streets as wide and as well kept as those of any town of the same size at home, with all the evidence of comfort and refinement, at least as palpable as in many a British town. He may be reminded that Melbourne is a city of nearly 400,000 inhabitants,—that Sydney, scarcely inferior in population, is of older date, as large as Edinburgh, and even more beautiful. In these and all the other prominent towns of Australia and New Zealand, even in the interior, the visitor may expect to find the manner of life quite equal to that in British towns of the same size at home. All the appliances of civilisation, all the comforts and luxuries which even an Englishman needs are here to be discovered, and are within the reach of perhaps a larger circle. The new-comer, or "new chum" as he will be called on landing, will speedily become sensible that, if he had formed any idea of roughness in connection with colonial life, he has done Australia some injustice. He may have brought with him, as part of his outfit, a revolver, as is the fashion of those who propose to make a sojourn in the colonies, but he will become aware that there is about as little use for a lethal weapon in any part of this country as in Piccadilly, and perhaps even less than in a London suburb. He will have formed strange notions of costume perhaps, but he will be quickly disillusioned in this as in some other of his views of colonial life. He will meet perhaps as well-dressed people in the streets as he would in any English town of the same size—certainly with very few that exhibit any of those signs of squalor and misery which are so frequent in the best quarters of the European cities. He is in a land where wealth is more equally distributed than in the Old World, where the mass of the people are well to do, well paid, well fed, and well clothed, and where there is practically no poverty and certainly no outward signs of pauperism. In all other respects he will find that he is here in the midst of a civilised people—differing only from an equal population at home by being somewhat brisker in their manner and busier in their habits. The hotels and the public conveyances he will perceive to be pretty much the same as in England, only that the first are dearer, and the second cleaner and far better horsed. Some of the vehicles developed by the necessities of this warmer and sunnier climate will appear strange to the new-comer, but there will be 'busses and tramcars in the streets, and hansoms to convey him to his destination. That the land is a new one though curiously familiar will, however, by many signs become evident. The air is warm, yet keen and exhilarating. The skies are cloudless, and usually of a depth of blue such as in Britain is phenomenal. In summer the heat and the glare justify the discarding of tall hats and a resort to *pugrees*, but in general the colonists are as devout in their loyalty to fashion as they of the old world. The rule of Sydney, or Melbourne, of Wellington, or of Adelaide, is precisely that of London or Edinburgh or Dublin in all social observances. Of life in Australia it may be said that its chief characteristic is its remarkable likeness to life in Great Britain. There are, of course, certain peculiarities of colonial society and manners, such as have been developed in harmony with its environments. The communion of man with man is kindlier and heartier than in the old country. There is certainly no greater laxity of moral tone, but there is greater freedom of manners. There is less stiffness and somewhat less ceremony in social intercourse in the smaller colonies, and in the newer settlements a spirit of *camaraderie* engendered by the common struggle for life against the forces of nature.

Coming to the details of existence, it may be said that those who intend to make any part of Australia their home need put away all fear that their banishment involves any great hardships or privations. It is not within our province to dilate upon the advantages which the colonies offer to those who go in quest of fortune. For the benefit of these and intending settlers of the humbler class there are a thousand guide-books. Let it suffice to say that there is no part where an Englishman can make a home with a fairer prospect of success in life than in the Australian colonies and in New Zealand. There is one advantage at least which these colonies have over those of America, which is in the more genial climate. There being practically no winter, and no portion of the year in which a man cannot labour in the open air, the Australian settler is saved at starting from one of the drawbacks incidental to agricultural life in Canada. No provision is necessary either for man or beast against a season when the earth is bound in a frozen chain, and all the course of industry perforce suspended. Cattle and sheep remain out all the year round, and care for themselves. As for the settler there is no part of the world in which he can pass so much of the day and of the year in the open air. Winter and summer he can make the surface of the earth his bed, having nothing to fear from wild beasts, from venomous insects, or from fever. There is nothing more enjoyable than "camping out" in any part of Australia, with a handful of fern leaves for one's spring mattress, one's saddle for a pillow, and the starry heavens overhead for a canopy. Let us admit that there are snakes in Australia, and plenty of them, but these reptiles, following the general antipodean law of contrary, go into their holes at night, and wander about only in the day-time. New Zealand enjoys a blessed exemption from all creeping things, and has no creature more noxious in the bush than the mosquito or the sand-fly.

Although the life of the colonist is a busy one, and the class of men placed by fortune above the need of work is very limited, there are no people who have a keener sense of enjoying themselves than Australians. The sports are mainly those of the old country, which are pursued, as we have all seen in the case of cricket, with great zeal and success. The climate is favourable to every kind of outdoor exercise, and there is no portion of the year in which healthful recreation need be suspended. As for riding, it is too common, and in the bush too necessary, to be classed as an amusement. There is hunting of the kangaroo both in the neighbourhood of the chief capitals, and the more legitimate and exciting sport which is carried on in the bush with kangaroo-dogs. Hares having been introduced and having thriven amazingly, coursing is now added to the national pastimes. Horse-racing is pursued with great zest, the "Melbourne Cup" being the local equivalent for the Derby. Contrary to the general belief in this country, there is plenty of game of all kinds in Australia, not to speak of the imported animals. Some of these last had better have remained at home, the rabbit, for one, having become a greater curse than that other misguided new-comer, the Scotch thistle. In the way of large game there is the ever-present kangaroo, which in some parts of the country has greatly increased under civilisation, owing to the decline of his two great natural enemies, the black man and the wild dog. Among birds there is the bustard or wild turkey, perhaps the noblest of the feathered kind from a gastronomic point point of view, not uncommonly turning the scale at 30 lbs. Wild swans, ducks and water-fowl of many species abound in the swamps and inland lakes, and are now carefully protected in most of the colonies during the breeding season. There are at least three kinds of indigenous quail in the south, of which one is nearly as large as a partridge. The snipe-shooting in some districts is of high excellence—the bird itself being superior in size and flavour to the snipe of commerce. Then there are pigeons, both ground and arboreal, the *wonga-wonga* being one of the grandest of its kind, besides parrots and parrakeets innumerable,—all good for the pot if not for sport. Nor is the angler without scope for his art in southern waters, though the finer branches of it are but little practised, and the local capabilities in that way but little understood. Independent of the various kinds of fish which have been introduced from the old country, of which the trout, the perch, and the tench have been an unqualified success, the rivers swarm with local varieties, some of great merit for the table as well as for the angle. The Murray cod, which is found naturally only in the Murray fluvial system, grows to a very large size, and, though coarse, is for a freshwater fish not to be despised. The golden perch (it must be understood that these names are the vulgar ones, implying no sort of ichthyological research) is a superior fish not so well known even to colonists as it deserves to be. These are caught at present by the roughest processes, the tackle resolving itself into a hook and string, and the fish being dragged out with scant ceremony. The cat-fish, a species of *silurus*, grows to a large size, and though of ungainly and even repulsive aspect is good food. Lastly, there is the Australian grayling, called in Victoria herring, and in Tasmania mullet, which rises to the fly, and is a fish of much gamesomeness and beauty, besides being excellent for the table. These are found only in the streams which flow directly from the Dividing Range into the sea.

For other recreation Australia offers, as we have seen under the heads of the various colonies, advantages equal to those of older countries. The taste for literature is very generally diffused, and is maintained by ample and well endowed libraries. That for art can scarcely be said to have yet arisen, although museums and picture-galleries have been founded in most of the capitals. The colonial newspapers are on a par with those of England; such journals as the Melbourne *Argus* and *Age*, the Sydney *Morning Herald* and *Daily Telegraph*, and the Adelaide *South Australian Register*, *South Australian Advertiser* and *Observer* being specially distinguished for their literary ability and their enterprise. In all these matters, the standard of taste in the large cities may be said to be fairly equal to that in the mother country. Speaking generally, the Australian press is commendably free from those vices which disfigure and discredit journalism in new countries, and one would have to travel very far inland to discover anything like rowdyism or ribaldry in the local paper. Of Australian politics nothing more need be said in this place than that, however violently parties may differ from one another (and indeed it is hard to know wherein they differ at all), there is one point on which up to the present time they are all agreed. They are all warmly attached to the British connection.

The relations, social, commercial, and political, between the Australian colonies and Great Britain are strengthened by the great improvement in the means of communication which has taken place within the last decade. In this improvement the Orient Company have had the honour of leading the way. The main object of this book is to stimulate travel, and to direct attention to the resources of the colonies with whose fortunes those of the Company are so closely linked, and to the many interesting places and objects which travellers by their line may see. Apart, however, from the commercial aim of this book, it is hoped that a considerable part of it will be found of interest to travellers on any ocean route, and even to intelligent readers not at once contemplating a sea voyage.

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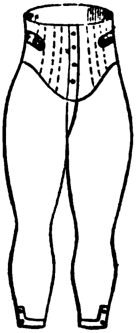

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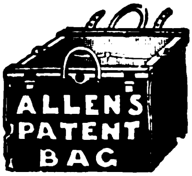

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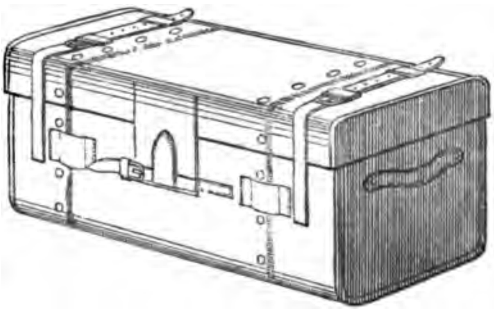

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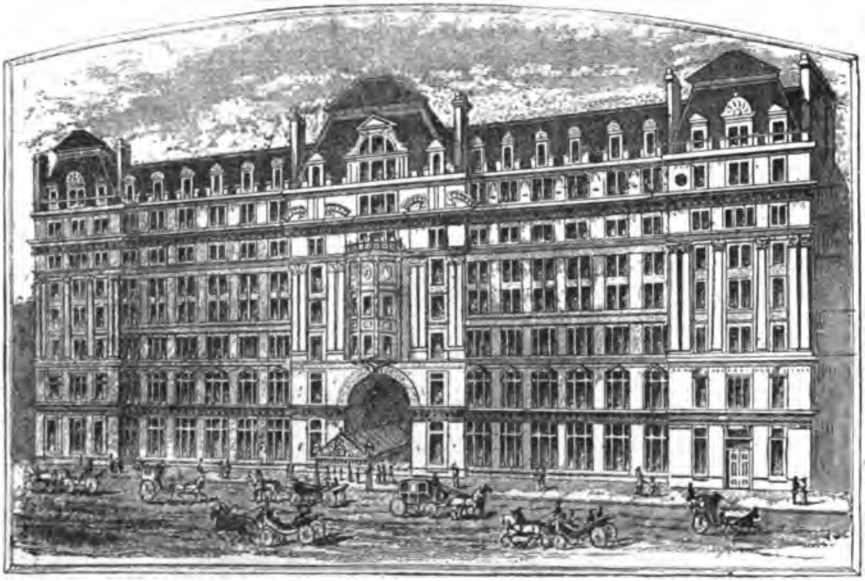

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500 Rooms, including Public and Private Rooms, unsurpassed for comfort, convenience, and elegance. Completely lit by Electricity. Passenger and Luggage Lifts to every floor.

Great attention is devoted to the Cuisine.

The Table D'Hotel, with separate tables, open to non-residents, is the most perfect dinner in London—from 6 till 8.30 p.m. Price 5/-.

For Tariff, apply to **HENRY LOGAN, Manager.**

Inns of Court Family Hotel.

South Entrance—

Lincoln's Inn Fields.

North Entrance—

HIGH HOLBORN.

RECEPTION HALL EASY OF ACCESS BY EACH ENTRANCE.

This Hotel is central, being in close proximity to the Royal Courts of Justice, Theatres, &c. Quiet, commodious.

TABLE D'HOTE at 6.30 until 8.0. WEDDING BREAKFASTS, DINNERS, &c.

Spacious Coffee Room, Ladies' Drawing Room, &c., &c., overlooking the splendid Lincoln's Inn Gardens. The Rooms overlooking Holborn are equally quiet, the front of the Hotel being paved with Ashphalte.

Hydraulic Lifts. Electric Light. Artesian Well Water. Moderate or Inclusive Tariff.

THE WESTMINSTER PALACE HOTEL,

VICTORIA STREET, LONDON, S.W.

THE HOTEL is opposite the Abbey, and in one of the best localities of the Metropolis. It is in close proximity to the Houses of Parliament, the American Legation, &c., and is within five minutes' walk of the St. James's Park and Westminster Bridge Stations of the Metropolitan District Railway, and midway between Charing Cross and the London, Chatham and Dover Railways.

The Hotel is practically fireproof; the girders are iron and the floors concrete. It contains a spacious General Sitting Room, and Ladies' Writing Room, an elegant Coffee Room, new Smoking and Billiard Rooms, 346 Bed Rooms, &c. Also several large Rooms, well adapted for Wedding Breakfasts and Dinners, for Meetings of Public Companies, the conduct of Arbitration Cases, and for the transaction of Parliamentary Business.

A HYDRAULIC LIFT, CONSTRUCTED ON THE SAFEST KNOWN PRINCIPLE, CONVEYS THE GUESTS TO ALL THE FLOORS.

HAIR CUTTING AND HAIR DRESSING ROOM IN THE ENTRANCE HALL.

TABLE D'HÔTE, from 6 to 8 p.m., 5s.

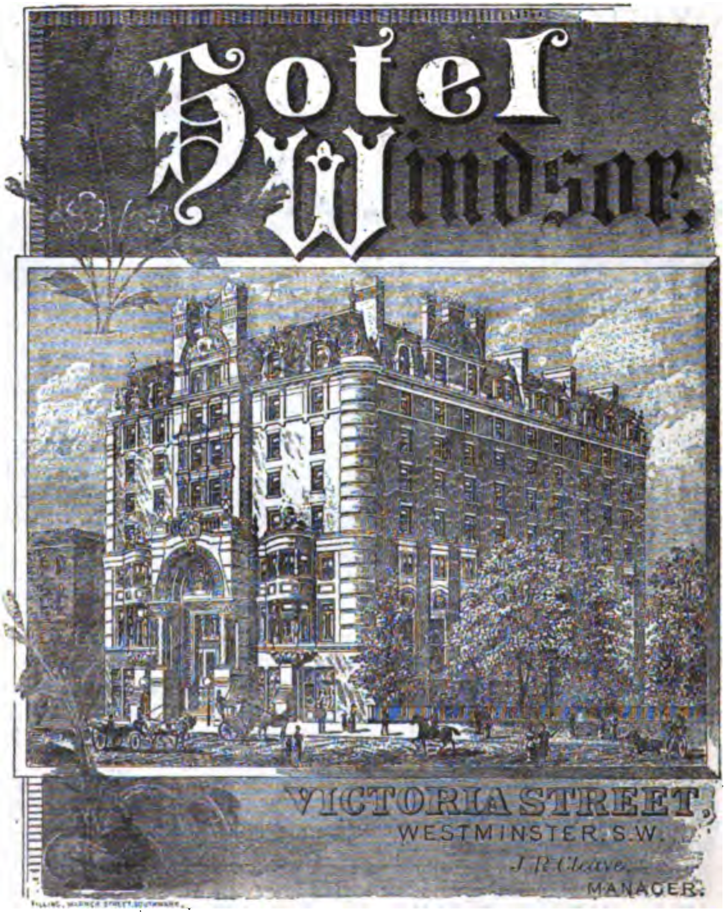
Special Boarding Terms made with guests proposing to stay one week or longer period.

The Hotel Omnibus will convey Visitors to or from any of the Railway Stations; and Private Carriages supplied by the hour, day or week, at fixed charges, on orders given at the General Office.

A TELEGRAPH AND POST OFFICE WITHIN THE BUILDING. **TELEPHONE No. 3070.**

Telegrams: "HOSTELRY, LONDON." Hy. GASCOIGNE, Manager.

LONDON, ENGLAND.



One of the finest Hotels in the Metropolis.

ELECTRIC LIGHT. PASSENGER LIFT.

TURKISH AND SWIMMING BATHS.

MODERATE TARIFF. FIRST-CLASS CUISINE.

NEW ZEALAND.

1. **DESCRIPTION.**—This Colony consists of a group of Islands, of which the two principal are called the North and South Islands, and a third, much smaller, called Stewart's Island. The whole group is over 1,000 miles long, with an average breadth of 140 miles. The Coast-line extends over 3,000 miles. There are, besides, some small outlying islands within the limits of the Colony, such as the Chatham Islands, the Auckland Islands, and Bounty Island.

2. **LAND.**—Persons desirous of obtaining information as to the Crown Lands of the Colony now open (or shortly to be opened) for sale or lease, can obtain full particulars on application at the General Crown Lands Office, Wellington, or at the Crown Lands Offices, at Auckland, New Plymouth, Wellington, Napier, Nelson, Blenheim, Christchurch, Dunedin, Invercargill and Hokitika, where Plans and Maps can be inspected and obtained. The "Crown Lands Guide," which is published from time to time, contains full particulars as to the quantity and quality of land open for sale or leasing in different parts of the Colony, and can be obtained at all the principal booksellers throughout the Colony. Farms, improved or unimproved, may also be bought from private owners, some of whom have acquired large tracts of land at low prices in former times.

3. **PRODUCTS.**—According to the latest statistics, there were 187,000 horses, 853,000 cattle, and 16,564,000 sheep in the Colony, and the annual value of wool exported amounts to about three-and-a-half millions sterling. The Colony also produces wheat, oats, barley, hay, linseed, potatoes, tobacco, kauri gum, and all descriptions of fruit and root crops grown in England. The bays and seas surrounding teem with fish, a hundred and forty species of which are known, of which thirty-three have been found of great value as articles of food.

Extensive coal beds have been found in almost every district, varying from ten to forty feet in thickness. The gold-fields have already produced above forty-four millions pounds' sterling worth for export. Iron mines have not yet been worked, but many varieties of iron ore, and in many cases of the purest character, are found in large quantities in many districts of the Colony, a large extent of sea coast being covered with almost pure iron sand.

All English trees grow well in New Zealand, and the forest trees indigenous to the country are of the finest kind.

4. **EDUCATION.**—The State system of elementary education is secular, and free of all cost to pupils. There are 1,021 district schools, with 102,407 pupils, and 2,619 teachers. There are endowed colleges and grammar schools for the higher education of boys and of girls in all the cities and large towns. The University of New Zealand has power to confer degrees.

5. **RAILWAYS.**—Tourists' Excursion Tickets may be obtained on application at the Booking Offices at Auckland, Wellington, Lyttleton, Christchurch, Port Chalmers, Dunedin, Invercargill, and Bluff Railway Stations. There are 1,700 miles of railway open to the public.

Tourists would do well to visit the Sounds of the West Coast of Otago, also the chain of Lakes that stretches North-east from Lake Manapouri in Otago, to Lake Tekapo in Canterbury, then visit the glaciers of Mount Cook, and cross by the Otira Gorge from Canterbury to Westland. The boiling springs, geysers, and terraces of the Auckland Hot Lake district, will also well repay a visit. Tourists' Maps can be obtained at the New Zealand Government Office, 7, Westminster Chambers, London.

QUEENSLAND.

Statistics, 1886-7.

REVENUE	£2,807,698	EXPENDITURE ...	£3,263,584
IMPORTS	£6,103,227	EXPORTS	£4,933,970
POPULATION	342,614	NO. OF SHEEP ...	9,690,445
NO. OF CATTLE ...	4,071,563	NO. OF HORSES ...	278,694

Crown Lands Acts of 1884 *to* 1886.

Agricultural Farms.

Agricultural Farms in proclaimed agricultural areas may be selected of not more than 1,280 acres, at a rent to be fixed by the Land Board, not being less than 3d. per acre per annum.

A license is issued to the selector, who must, within five years, fence in the land, or make permanent improvements of the value equal to the cost of the fence. When the conditions of residence and improvements are fulfilled, a transferable lease for 50 years will be granted from 1st January or 1st July nearest to the date of license. If lessee can prove ten years' continued residence, he will be entitled to purchase the holding at a price to be fixed by the Land Board, not being less than 20/- per acre, and the rent already paid will be reckoned as part of the purchase-money.

Homesteads.

In the case of an Agricultural Farm of not more than 160 acres, if the lessee proves five years' residence and an expenditure of not less than 10/- an acre on permanent improvements, he can secure the fee simple by paying such sum as shall with the rent already paid amount to 2/6 an acre.

Grazing Farms.

Grazing Farms may be selected in proclaimed districts of not more than 20,000 acres, at a rent to be fixed by the Land Board, not being less than ¾d. per acre per annum. A license will be issued, and when the conditions of fencing, &c., are fulfilled, a transferable lease for 30 years will be granted.

Maps of Land proclaimed open for selection as above, showing distance from railway or water carriage, price and rent per acre, qualitiy and capabilities of land, so far as can be stated, may be inspected at the Land Office, Brisbane, or at any of the District Land Offices.

Land Orders.

Land Orders of the nominal value of £20 are granted to all approved passengers over twelve years of age who pay their own passages to Queensland, and of the nominal value of £10 to those from one to twelve years.

Copies of the Crown Lands Acts of 1884 *to* 1886, *and all general information about the Colony can be obtained on application to*

The Agent-General for Queensland, 1, Westminster Chambers, Victoria Street, London, S.W.

TASMANIA.

1. Description.—The Colony of Tasmania is situated in the Southern Hemisphere, between the parallels of 40° 33′ and 43° 39′ south latitude, and between 144° 39′ and 148° 23′ meridians of east longitude, and corresponds nearly with Southern France and Northern Italy in northern latitude. It is irregularly heart-shaped, and occupies an area of 26,215 square miles, *i.e.*, about the same extent as Scotland.

2. Land.—Persons desirous of obtaining information with respect to Crown Lands open for sale or lease, can obtain full particulars from the Crown Lands Offices at Hobart and Launceston. The Crown Lands Guide, published yearly, contains all the necessary information respecting the quality and extent of land open for purchase or selection, together with terms of purchase. This work may be obtained at the Crown Lands Office, Hobart, or from the leading booksellers in Hobart and Launceston.

3. Products.—Among the products of the Colony, the following are the most important: Tin, Gold, Wool, Timber, Bark, Fruits of various kinds, Hops, Wheat, Oats, Barley, Hay and Potatoes. The total value of tin alone exported during the last decade, amounts to £3,393,832, and latterly the year's export represents nearly 16 per cent. of the total tin imports of England. During 1886 there were 29,684 horses, 148,665 cattle, and 1,609,406 sheep in the Colony, and the yearly wool exports has varied between £542,244 in 1880 to £310,934 in 1886.

Important Coal Fields exist in various parts of the Colony, but little has been done yet to develop them. The seams vary from 2 feet to 12 feet in thickness, some of which are of very fair quality.

Fish abound in the lakes, rivers, and seas, some, such as the "*Hobart Trumpeter*," of excellent quality. There are over 220 species of fish known to naturalists, and about one-third of these are edible. Tasmania has succeeded in the acclimatisation of the following important European and American fishes: *Salmo salar*, *S. trutta*, *S. fario*, *S. fontainalis*, *Perca fluviatilis*, *Tinca vulgaris*. The most important native timber trees are the Blue Gum, the Huon Pine, and the Blackwood.

4. Education.—The State system of elementary education is secular and compulsory for children at the school age (7 to 14 years). In 1886 there were 209 district schools, 317 instructors, and 16,014 children on the school rolls. Besides the State schools there were in the same year 165 private schools open, with 5,495 scholars.

5. Railways.—During the year 1886, there were 303 miles of railway open for traffic, and 138 miles in course of construction. These lines are mostly constructed upon the 3′ 6″ gauge, and connect the principal centres of population.

LONDON & SOUTH WESTERN RAILWAY CO.

THE SHORTEST ROUTE

—BETWEEN—

LONDON & PLYMOUTH.

The only Railway route between Plymouth, Portsmouth and Southampton, and the South West and South Coasts.

THE LONDON AND SOUTH WESTERN RAILWAY is in direct communication from Plymouth to all parts of Great Britain. IT IS THE SHORTEST AND MOST DIRECT ROUTE TO LONDON, and passes through some of the finest scenery in Devonshire.

THE COMPANY'S STATION IN PLYMOUTH IS THE "NORTH ROAD STATION," about 15 minutes from Millbay Pier, where all ocean passengers are landed.

EXPRESS "SOUTH WESTERN" TRAINS RUN FROM THE NORTH ROAD STATION to Exeter, Yeovil, Salisbury, Portsmouth, Southampton, London and all parts of the country.

Reduced Fare Tickets

For Ocean Passengers from Plymouth to London can be obtained at the Central Offices, Bank of England Place, Plymouth, and also at the North Road Station.

Friary Goods Station, Plymouth.

The New Plymouth Goods Station at the Friary is open for Goods, Fish and Cattle traffic, and a fast through service of Goods Trains, without break of gauge, runs between Plymouth and London and all parts of the Kingdom.

Goods, &c., will also be conveyed between Plymouth and Bristol and Bath, viâ Templecombe, and to the Midland Counties and the North of England, without break of gauge, either viâ the Midland, the London and North Western or Great Northern Railways.

Every information as to the Train Service, Fares, &c., can be had on application to—

Mr. F. P. WHARTON, at the Central Offices, Bank of England Place, Plymouth.

WATERLOO STATION,
LONDON, *Oct. 27th*, 1887.

CHAS. SCOTTER, General Manager.

SOUTH EASTERN RAILWAY.

LONDON, FOLKESTONE, AND DOVER.

Royal Mail and Short Sea Routes.

Via Folkestone and Boulogne, Dover and Calais, Dover and Ostend.

CONTINENTAL ✦ TRAIN ✦ SERVICE.

Termini in London:—

Charing Cross (West End); and Cannon Street (City).

PARIS and LONDON in 8 HOURS, by SPECIAL EXPRESS DAILY,

SERVICES *via* FOLKESTONE and BOULOGNE.

AND BY THE

MAIL TRAINS & PACKETS, VIA CALAIS & DOVER,

In $8\frac{3}{4}$ hours.

Brussels, Cologne, Berlin, St. Petersburg, Vienna, Munich, Naples, Turin, Venice, Rome, Brindisi, Marseilles, and most of the Chief Continental Cities and Towns, with equally quick travelling.

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THROUGH RATES FOR ORDINARY PARCELS AND MERCHANDISE.

By Passenger *(Grande Vitesse)* Trains, under the direct sanction and control of the South Eastern and Northern of France Railway Companies. The Rates include all charges for Shipping, Landing, &c., (Duties excepted), at the respective Ports, and delivery at either end (within the usual limits)—PARCELS forwarded by this service from LONDON in the afternoon are delivered the following day in PARIS, where the Customs Examinations take place, thus avoiding any detention at Boulogne.—PARCELS are also forwarded by this route to all the *Principal Towns on the Continent*, and from all the Principal Towns in the North of England and Scotland, and *vice-versâ.*

Special through trains for Bullion and Value Parcels to and from Paris, Belgium, Holland, &c., including all charges for Shipping, Customs formalities, &c., are also in operation.—Rates for Insurance of Value Parcels, such as Plate, Jewellery, Deeds, &c., against Sea, and all other risks.

BOOKS OF THESE TARIFFS COMPLETE ON APPLICATION.

The SOUTH EASTERN RAILWAY (by Special Appointment to the General Post Office) convey the MAILS FOR THE CONTINENT, INDIA, CHINA, and the COLONIES, viâ the MONT CENIS and BRINDISI. Through Tickets are issued to Passengers for the principal Cities and Towns in—

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AGENCIES:-

PARIS ..	.. **4, Boulevard des Italiens.**	**BOULOGNE** ..	.. **Quai Chanzy.**
BRUSSELS ..	.. **46, Montague de la Cour.**	**CALAIS** ..	.. **Chemin de Fer du Nord.**
COLOGNE ..	.. **1, Friederich Wilhelm Str.**	**OSTEND** ..	.. **101, Rue St. Georges.**

MYLES FENTON, General Manager.

GREAT WESTERN RAILWAY.

Information for Passengers landing at Plymouth.

STEAM TENDERS meet the vessels belonging to the principal Steamship Companies on arrival at Plymouth, and convey passengers and their baggage to the Great Western Docks, situated about 600 yards from the Great Western Railway Station, and contiguous to the Telegraph office and the principal hotels.

Whenever the vessels disembark their passengers by daylight (and a sufficient number of passengers land), railway carriages and luggage vans will be placed opposite the Custom House at the Docks, so that passengers for the Great Western Line may, after their baggage is cleared, take their seats and proceed without change of carriage, *via* Millbay Station, to London, or any other station *en route* at which the Train stops.

The Tickets from Plymouth to London are available for seven days from the date of issue, and passengers travelling to London by Great Western Railway may break their journey at any Main Line Station *en route*, provided the journey is completed within that time. Application for the necessary authority to break the journey must be made to the Ticket Clerk at the Docks, or to the Station Master at the Millbay Station.

Special Trains will be run whenever there is a sufficient number of passengers, and will be timed to start from the Millbay Station as soon as practicable after the arrival of the vessels. The Company's servants at the Docks and Railway Station will afford passengers every information they may require as to the departure of the Trains and the railway arrangements generally.

TRAIN SERVICE between LONDON and PLYMOUTH (Week Days).

				NEW TRAIN			A
	1, 2, 3.	1, 2, 3.	1 & 2.	1, 2, 3.	1 & 2.	1, 2, 3.	1, 2, 3.
Paddington .. .. *Dep.*	a.m. 5 30	a.m. 9 0	a.m. 11 45	p.m. 1 0	p.m. 3 0	p.m. 5 0	p.m. 9 0
Exeter .. .. .. *Arr.*	11 50	p.m. 2 8	p.m. 4 0	5 37	7 14	10 20	a.m. 2 30
Plymouth .. .. *Arr.*	p.m. 2 20	4 30	5 55	7 30	8 55	12 15	4 37

			NEW TRAIN			A
	1 & 2.	1, 2, 3.	1, 2, 3.	1 & 2.	1, 2, 3.	1, 2, 3.
Plymouth .. .. *Dep.*	a.m. 8 35	a.m. 10 35	noon. 12 0	p.m. 2 8	p.m. 2 30	p.m. 8 23
Exeter .. .. .. *Dep.*	10 30	p.m. 12 50	p.m. 1 53	3 55	4 55	10 30
Paddington .. .. *Arr.*	p.m. 2 45	6 0	6 30	8 10	10 20	a.m. 4 0

ORDINARY FARES ARE CHARGED BY ALL TRAINS.

A—A Sleeping Carriage (1st class) works between LONDON and PLYMOUTH by these Trains.

The Great Western Company's Railway from London to the Land's End is the only existing BROAD GAUGE main line in the country, and the carriages running in the Express Trains are the finest Railway Carriages in ordinary use in the kingdom.

FAMILY CARRIAGES (with lavatories and other conveniences), containing compartments for servants, can be engaged on payment of not less than Four First-class and Four Second-class Fares.

HY. LAMBERT, General Manager.

PADDINGTON, *December*, 1887.

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CONTRACTORS FOR ELECTRIC LIGHTING

AND

ELECTRIC PLANT OF EVERY DESCRIPTION.

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By SINGLE CABLES to Manila, New Zealand, Tasmania, Zanzibar, Mozambique (duplicate), Delagoa Bay, and Natal for Cape of Good Hope. Also to Bathurst, Sierra Leone, Accra, Lagos and Bonny, and to Peru, Chili and South America.

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3, Gt. Tower Street; 42, Parliament Street, Westminster;
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MANCHESTER—20, Brown St. LIVERPOOL—5, Exchange Buildings.
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The Company's Cables are worked by Muirhead's DUPLEX principle upon all its Main Sections.

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Winchester House, 50, Old Broad Street, E.C. By order, GEORGE DRAPER, *Secretary*.

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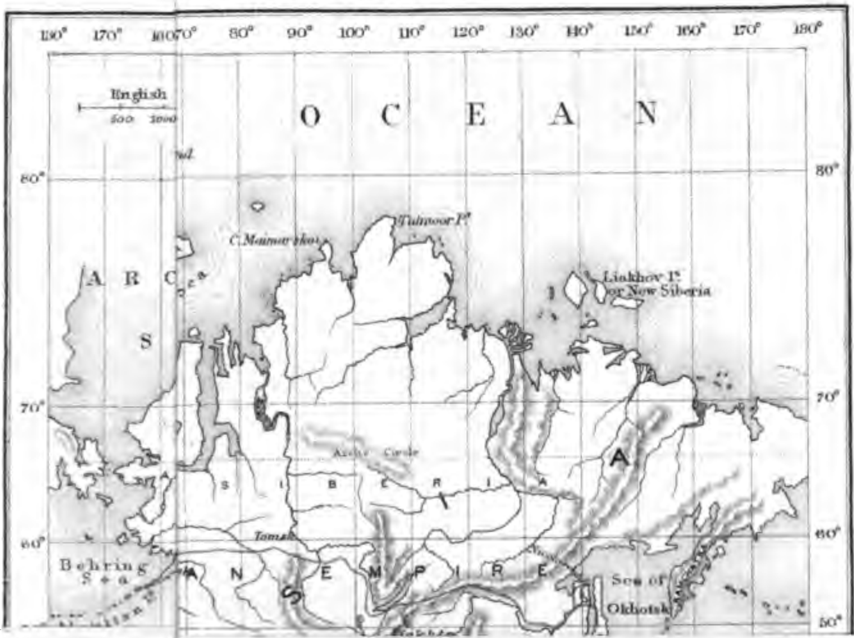

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It is far less trying to the eyes than writing with a pen, and it does not in the least cramp the hand.

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Original Makers. Established 1844.

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Patent Dry Gas Meters.

SUITABLE FOR ALL CLIMATES.

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For VICTORIA PATENT GAS BURNERS, LAMPS, &c.

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Bottlers and the Trade generally supplied with a superior article for Export and Home Consumption.

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HAVE BEEN AWARDED FOR THEIR CIDER AND (SPARKLING) WINES—

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THIS SEASON'S MAKE IS OF THE FINEST QUALITY. EARLY ORDERS SOLICITED.

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Ale, Beer and Cyder Merchants,

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THE LARGEST SHIPPERS OF BASS IN THE WORLD.

SOLE SUPPLIERS of BOTTLED BEER to the ORIENT LINE of STEAMERS.

GOLD MEDAL—CALCUTTA, 1884.

The very finest **WHISKY** Scotland produces.

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(Registered Trade Mark.)

SPECIAL BLEND. — EXTRA OLD.

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"VAUGHAN-JONES' 'C.I.G.' Whisky is a blend of the finest original Highland Whiskies. It is mellow, full-bodied Whisky, of particularly rich aroma and flavour; its softness being such as is only acquired by age. . . . . . The 'C.I.G.' Whisky may be said to be of unusual excellence."

Please apply for VAUGHAN-JONES' "C.I.G." WHISKY to Wine Merchants and Storekeepers when "Orient" Steamers touch at Gibraltar, Naples, Port Said, Suez, Aden and Cape Town.

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BUYING AGENTS WANTED.

Exported to all parts of the Globe.

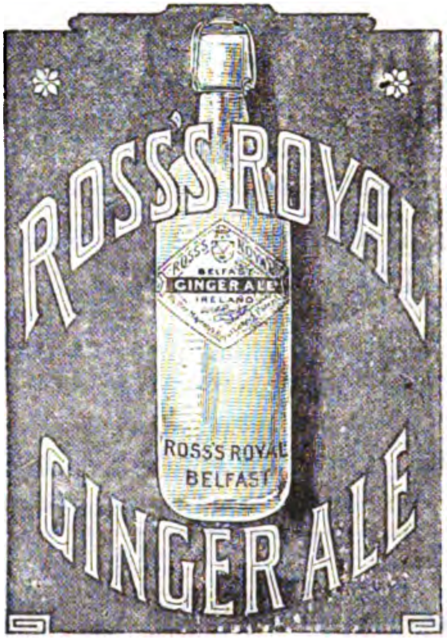
PETER F. HEERING'S
COPENHAGEN
GOLD MEDAL
CHERRY BRANDY
Purveyor by Appointment to the Royal Danish and Imperial Russian Courts and H. R. H. the Prince of Wales.

Estab. 1818.

Sold by all respectable Wine Merchants.

ROSS'S ROYAL

BELFAST



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21, Great Tower Street, London, E.C.,
14th June, 1887.

"I HEREBY CERTIFY that I have conducted a very careful Chemical Analysis of 'ROSS'S ROYAL BELFAST GINGER ALE,' and from the results obtained I am able to speak with confidence as to its great purity of composition and high-class character. It is a NON-ALCOHOLIC BEVERAGE, having a Choice Flavour and Bouquet, the result of a judicious blending of delicately-flavoured principles, and I can commend it to the notice of the Public as a Beverage well suited for ordinary and regular use. The samples analysed were obtained by me from Stores here, the purpose for which they were required being unknown to anyone save myself.

"GRANVILLE H. SHARPE, F.C.S., *Analyst.*

"Safest Drink in any Climate."

ANALYSIS.

CHEMICO AGRICULTURAL SOCIETY OF ULSTER,
Belfast, *November 17th, 1879.*

"THE examination affords most satisfactory results, and shows the WATER from spring to be of GREAT PURITY and admirably suited for your manufactures.

"I found the drinks skilfully prepared and of superior quality. They can be recommended for family and medical use.

"JOHN F. HODGES, M.D., F.C.S., F.I.C.,
"Public Analyst for Belfast."

GINGER ALE

AND OTHER

BELFAST AËRATED WATERS.

"Extract from the "Colonies and India."

ON more than one occasion in these columns allusion has been made to the high reputation won by Irish firms who supply the great desideratum of Colonial life—pure and wholesome non-intoxicating beverages. Among the makers of these drinks Messrs. W. A. Ross & Co., occupy the foremost place. At their establishment, situated in Belfast—renowned throughout the four quarters of the globe for its Cromac springs—three thousand dozen bottles of aërated waters are produced daily for shipment to the whole of the Colonies and to South and North America. Chief among Messrs. Ross & Co.'s specialties stands the celebrated Belfast Ginger Ale, its delicate aromatic flavour securing it undivided appreciation from connoisseurs. In regard to the character of the water employed by Messrs. Ross in the manufacture of their beverages—a point to which too much attention cannot be paid—the fact that this establishment boasts an artesian well which reaches a spring of remarkable purity serves to strongly recommend Messrs. Ross & Co.'s productions, from a hygienic point of view, to the favour of consumers. Special advantages are offered by Messrs. Ross in connection with the export trade, and the peculiar method of packing employed only by this firm being considerably appreciated by buyers in foreign and Colonial markets; whilst the merit possessed by these drinks of preserving unimpaired for years their freshness and flavour, under all climatic conditions, contributes largely to the maintenance of their cosmopolitan reputation. A gold medal—the only one awarded for Ginger Ale—won at Liverpool last year, is the latest addition to the long list of honours which have been secured by Messrs. Ross at both European and Colonial exhibitions, as official confirmation of the encomiums passed upon their manufactures by consumers throughout all parts of the world.

Sole Manufactory: BELFAST, IRELAND.

GOY LIMITED.

ESTABLISHED 1817.

21, LEADENHALL STREET,
54, LIME STREET,
LONDON, E.C.

H. F. GRIFFIN, Managing Director.

FOR OUTFITS,

Cabin Furniture, Clothing, Boots,

and all **necessaries for the voyage** and use in the **Colonies,** can be supplied and put on board at a *few hours' notice,* thus avoiding the trouble and bother of Luggage to **Town,** and of going from one Tradesman to another for the multitudinous articles comprised in an outfit.

Estimates submitted free of charge for **Outfits to all parts of the World,** and for all classes. Lists, Patterns, and Self-Measurement Instructions forwarded by Post.

LUGGAGE SHIPPED.—Passengers are advised to take a Cab direct from the Railway Station to **21, LEADENHALL STREET, E.C.,** where the luggage may be left and arrangements made for shipment.

The Captains', Officers', Surgeons', Engineers', Midshipmen's & Apprentices' Outfitter.

ROYAL NAVAL RESERVE UNIFORMS, &c.

THE PASSENGERS' AND EMIGRANTS' OUTFITTER.

DECK SEATS	3/6, 5/6 & 6/6
CANE CHAIRS, with Arms	14/6
" " " and Leg-rest	17/9, 21/- & 28/6
CANE LOUNGES	30/-, 40/- & 45/-
" " Folding Backs	45/- & 50/-
CANE LOUNGES (folding five positions)	55/-
FOLDING HAMMOCK CHAIRS	4/6, 7/6 & 12/6
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" " " " and Leg-rest	12/6
ASHANTEE HAMMOCKS	8/6, 9/6, 10/6, 11/3, 12/3, 13/6 & 14/9

GOY'S STORE for every description of Hosiery, Gloves, Ties, Scarves, Perfumery, Toilet Requisites, Shirts, Collars, Rugs, Portmanteaus, Bags, Umbrellas, Tailoring, Boots, Shoes, Ladies' Underclothing, Oilskins, Waterproofs, Cabin Furniture, Bedding and Mess Utensils.

American Kits, 10/6. Australian Kits, 20/- and upwards.

1837. 1887.

R. ATKINSON & Co.

For 50 Years

Manufacturers of IRISH POPLIN

To Her Majesty.

ATKINSON & CO.'S

Black and Colored Silk Poplin,

SURPASSES ALL OTHER MATERIALS FOR

RICHNESS, Durability,

SOFTNESS and

GRACEFULNESS of DRAPERY.

PATTERNS
POST FREE,
To all parts of the world.

PRICES:
4/6 to 11/- per yard.
24 inches wide.

A SINGLE DRESS
Carriage FREE to any Country where Parcel Post is in operation.

Only to be had direct from:—

31, College Green,
DUBLIN, IRELAND.

DINNEFORD'S FLUID MAGNESIA

DINNEFORD'S MAGNESIA.

For over 40 years the medical profession have approved of this Pure Solution as the best remedy for **Acidity of the Stomach, Heartburn, Headache, Gout,** and **Indigestion.** It is the safest **aperient** for delicate constitutions, Ladies, Children, and Infants.

As a Cooling Drink in warm climates, and during hot seasons, Dinneford's Magnesia has been found highly beneficial.

DINNEFORD & CO.,

Pharmaceutical Chemists to the Court & Élite of the Nobility,

180, NEW BOND STREET, LONDON.

SOLD THROUGHOUT THE WORLD.

First Established 1825.

THE BEST & CHEAPEST FARINACEOUS FOOD.

NEAVE'S FOOD

—FOR—

INFANTS

AND

GROWING

CHILDREN.

INVALIDS

AND

THE

AGED.

HEALTHY CHILDHOOD PROMOTES ROBUST MANHOOD

NEAVE'S

INFANTS

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FARINACEOUS

FOOD

TRADE MARK,

Lancet.—"Carefully prepared and highly nutritious."

British Medical Journal.—"Well adapted for Children, Aged People, and Invalids."

IN ONE-POUND CANISTERS

ONE SHILLING EACH.

Sold Everywhere.

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OF THE MANUFACTURERS.

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By Special Appointment to Her Majesty the Queen.

BLYTH & SONS,

4 to 7, Chiswell Street,

FINSBURY SQUARE, LONDON, E.C.

MANUFACTURERS OF

High-class Domestic Furniture,

AND

Complete House Furnishers.

Designs of and Estimates for Cabinet Furniture sent free of charge to any part of the World.

CONTRACTORS to the ADMIRALTY and WAR OFFICE.

WORKS: BLYTH STREET, BETHNAL GREEN, LONDON.

MEDALS in 1851 & 1862 EXHIBITIONS.

HARTMANN'S

Genuine Rahtjen's Composition.

For SHIPS' BOTTOMS.

USED BY NEARLY ALL THE LEADING

Steamship Companies of the World, and by most Governments, including the British, Indian and Colonial.

Its chief advantages are:—

GAIN IN SPEED owing to the smooth and slippery nature of the Composition.

DRIES QUICKER THAN ANY OTHER PAINT, and enables TWO COATS to be given in ONE DAY.

LESS FREQUENT DOCKING, saving TIME and EXPENSE.

COVERS A LARGER SURFACE than ANY OTHER Composition.

PROTECTION against Rust, Grass and Barnacles.

IS IN NO WAY DELETERIOUS TO THE METAL, need not be heated and is supplied ready for use.

EASILY AND INEXPENSIVELY APPLIED.

……

When specifying for Rahtjen's Composition, please always state "HARTMANN'S MANUFACTURE," and see that every package supplied is marked "HARTMANN'S," as only in this case can you rely upon getting the Genuine Article.

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Sole Proprietors:—

SUTER, HARTMANN & CO.,

18, BILLITER STREET, LONDON.

Agents at all important Ports throughout the World.

Feed-Water Heaters. Water Heating Machines.

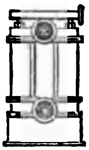
The "Compactum" Heaters have received the Highest Awards at Five Exhibitions, are largely used in H.M. Navy and the Mercantile Marine, and are specially adapted for Steam Yachts and Land use.

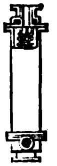
FRESH WATER DISTILLERS for producing Fresh Drinking Water from Sea Water by Simple and Double Distillation. Feed Make-up Apparatus for Fresh Water supply to Boilers.

REPORTS RECEIVED RECENTLY ABOUT HEATERS.

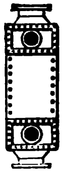
Newcastle-on-Tyne,
Dec. 16, 1887.

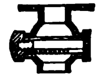
Messrs. JOHN KIRKALDY,—DEAR SIRS,—Owing to the splendid results reported from Messrs. Adam Brothers' Steamers, they have just given me orders for Heaters for the s.s. "Ardmellie," "Ardlethen," and "Avochie," conditional on first being delivered by Tuesday next, and the second a week later. I know you are much pressed just now with orders, but have taken order and rely on you to complete.—Yours faithfully,
EDWIN PERRY.


DISTILLER


SURFACE CONDENSER

EXHAUST STEAM HEATER


EXHAUST OR LIVE STEAM HEATER


DIRT ARRESTER

METALLIC JOINT

Feed-Water Heating.

Newcastle-on-Tyne, Oct. 21st, 1887.

Mr. JOHN KIRKALDY, London.—DEAR SIR,—"We beg to enclose you details which we have received from our steamers, 'Lisnacreive,' 'Saxmundham,' 'Gleadowe,' 'Yoxford.' Your Feed-Water Heater appears so far to be a success, and we are pleased to express our satisfaction at the result. The effective work of the engines has been kept up upon a marked reduction in the consumption of coal, and we herewith give you instructions to fit the 'R. F. Matthews' s.s., as soon as she arrives in the U.K."—Yours truly,
HUNTING & PATTISON.

H. CLARKSON & Co.,
20, Billiter Street,
Engineering Dept.,
London, Jan. 5, 1888.

Messrs. JOHN KIRKALDY, Limited, 40, West India Dock Road, London.

DEAR SIRS,—Referring to our s.s. "Bayley," fitted with your "Compactum" Feed-Water Heater, I have the pleasure to state that the water has been delivered to the boilers at a **very high temperature**; that on her return from a nine months' voyage I found the Boilers in good order, perfectly tight, **and no repairs of any kind required.** This I attribute entirely to the action of the Heater.

Yours faithfully,
(Signed) THOMAS TODD,
Supt. Engineer to Messrs. Clarkson & Co.

No Steamer should be without a Heater. This Heater requires no special pumps; no trouble caused to existing pumps or valves. Orders booked in rotation on account of large demand, but quickest possible delivery given. Details required: Working Pressure, Indicated Horse-power, and the diameter of Feed Pipe.

DETAILS.* *Reduction in consumption ascertained by careful measurement of Coal expended.

NAME OF STEAMER.	Average Pressure of Steam.	Average of Vacuum.	Average Revolutions.	Temperature of Hot Well.	Temperature of Feed Water.	Temperature of Discharge Water.	Average Speed—Miles per day.	With and without Feed-Heater in use.	Reduction in Coal Consumption.	REMARKS FROM ENGINEERS ON THE VOYAGE.
Lisnacrieve . .	80 77	25 26	62 61	145 132	189 120	— —	250 240	with without	T. 1·98	Coal bad. Bad weather in Gulf Lyons.
Saxmundham	77	24	57 to 59	—	188 to 190	110	—	—	T. 1 to 1·5	Wheel 3 turns back. Head wind and dirty weather Coals good.
Gleadowe . .	79 to 80	23 down to 22.5	59 down to 58	138 to 143	190 to 200	—	—	—	T. 1·06	No difficulty in keeping steam, & does its work well.
Yoxford	—	—	—	133	200	—	—	—	T. 1 to 1·5	Works well. Coals inferior & dirty.

S.S. "Glengyle," Glen Line, 3000 I.-H.P., triple expansion, 150-lb. pressure. After voyage to and from Shanghai, &c., Heater reported a great success, and Boilers in splendid condition, the grease, &c., being prevented by deposit in Heater, from entering them.

Telegraphic Address: "COMPACTUM, LONDON." Telephone No. 5094.

JOHN KIRKALDY, LIMITED,

Engineers and Government Contractors, 40, WEST INDIA DOCK ROAD, LONDON, E.

ARE APPROVED BY THE BOARD OF TRADE AND ARE ON ADMIRALTY LIST.

WILLIAM GRAY & Co.,

76, WEST INDIA DOCK ROAD, LONDON, E.,

And at TILBURY DOCKS.

ESTABLISHED OVER HALF-A-CENTURY.

Painters, Plumbers, Glaziers, Brass Finishers, &c.

TIN AND IRON PLATE WORKERS.

Scuttles, Pumps, Hoses, &c. Lamps and Galley Utensils repaired.

SHIPS' STORES.

HOUSE DECORATORS.

Gas. Hot Water. Electric Bells. French Polishing, Lacquering, &c.

HEARTHS, ENCAUSTIC TILING, BATHS, &c.

The undermentioned Lines of Steamers, Sailing Vessels and Shipowning Firms, &c., are among those whom we have worked for many years.

"BEN" LINE.
"CHINA SHIPPERS' MUTUAL" LINE.
"CITY" LINE.
"CLAN" LINE.
"GLEN" LINE.
HUDSON'S BAY COMPANY.
NEW ZEALAND SHIPPING CO.
"ORIENT" STEAM NAVIGATION CO.
PACIFIC STEAM NAVIGATION CO.
"ROYAL MAIL" STEAM PACKET CO.
"WILSON" LINE.
"VILLAGE" LINE.
ANDERSON, ANDERSON & CO.
ALLAN, JOHN, & SONS.
ALLAN, J. & A.
BOTT, W. E., & CO.
BRITISH SHIPOWNERS' CO.
BULLOCK BROS.
CARMICHAEL, A. & J. H., & CO.
CLINK, J. D., Esq.
DONALDSON, ROSE & CO.
CRAWFORD, W. & J.
GREEN, R. & H.
HARDIE, JOHN & CO.
HON. CORPORATION OF TRINITY HOUSE.
HOULDER BROS. & CO.
MARINE ENGINEERS' UNION.
METROPOLITAN ASYLUMS' BOARD.
MONTGOMERIE & WORKMAN.
POTTER, JOHN, Esq.
RENNIE, J. T., SONS & CO.
SCRUTTON, SONS & CO.
SMITH, WM., & CO.
STEWART, J. & W.
WALKER, T. B., Esq.
WATSON BROS.

And sundry other private firms.

THOMAS HUBBUCK & SON, White Lead, Oil, Paint and Varnish Works,

24, LIME ST., FENCHURCH ST., LONDON.

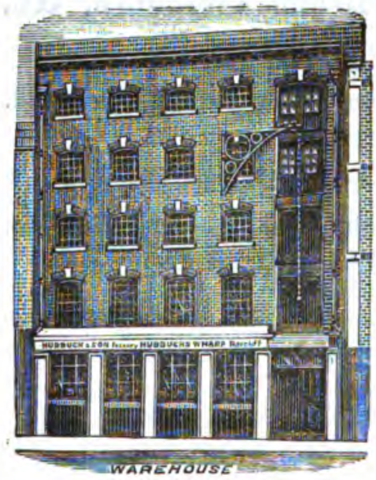
Telegraphic Address: "HUBBUCK, LONDON."

HUBBUCK'S PATENT WHITE ZINC PAINT.

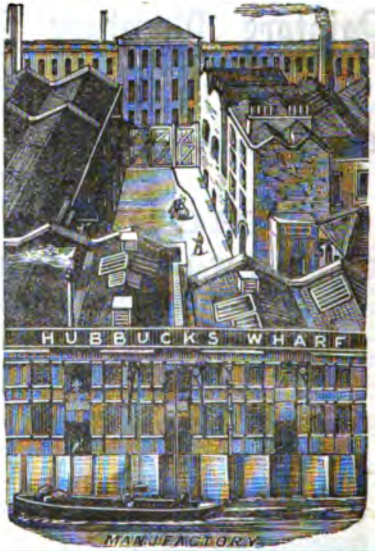
By their process, which is patented, the Pure White Zinc Paint is the most durable and beautiful Paint for internal and external painting, and does not stain or discolour with the London atmosphere, or in the neighbourhood of Gas and Chemical Works. In all climates it is superior to other Paint for the inside and outside of Houses, Ships, Lighthouses, Iron Roofing and Bridges.

EACH CASK OF PURE WHITE ZINC PAINT IS STAMPED:

"HUBBUCK, LONDON, PATENT."


HUBBUCK & SON Factory HUBBUCKS WHARF
WAREHOUSE

ESTABLISHED 1765.



HUBBUCK'S PREPARED LIQUID PAINTS.

These Paints are packed in 1 lb., 2 lb., 3 lb., 4 lb., 7 lb. and 14 lb. tins, and 28 lb. drums; and will be found of great advantage. Being mixed ready for immediate use, no further preparation is needed.

HUBBUCK'S ANTI-CORROSIVE PAINTS.

The most valuable protection to Iron Roofs, Bridges, Piers, Ships and Buildings exposed to stormy weather and scorching sun; they soon become extremely hard, do not blister, and are very durable.

HUBBUCK'S ANTI-OXIDATION COMPOSITION,

For coating iron and wood ships' bottoms; a preservative against fouling and corrosion.

HUBBUCK'S PALE BOILED LINSEED OIL,

Being much purer and paler than Raw Linseed Oil, is the only Boiled Oil that can be used for white and delicate coloured Paints. It drys quick and hard, never blisters, and is more durable.

HUBBUCK'S BINNACLE AND COLZA OILS,

Prepared expressly for Ships' Lights, Lighthouses, &c.

HUBBUCK'S WHITE LEAD, COLOURS, OILS AND VARNISHES,

Properly packed for exportation.

HUBBUCK'S PAINTS, OILS AND VARNISHES,

Are the best and therefore the cheapest. Beware of Counterfeits of their Name and Trade Mark.

HUBBUCK'S · WHITE ZINC · PATENT · LONDON ·
TRADE MARK.

CAUTION.

Since the successful introduction of Hubbuck's Pale Boiled Linseed Oil, some manufacturers and dealers are pirating this name and selling fraudulent imitations as "Pale Boiled Oil," "Improved Boiled Oil," "Clear Boiled Oil," &c. These imitations are not to be depended on, and only cause disappointment and loss.

HUBBUCK'S PALE BOILED OIL
TRADE MARK.

THE PACIFIC

FIRE & MARINE INSURANCE CO.

Incorporated by Act of Parliament, N.S.W., 26 Vict.

Capital, £1,000,000.

LIABILITY OF SHAREHOLDERS UNLIMITED.

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AT THE

LONDON OFFICE: 36, CORNHILL, E.C.

Marine Insurances effected at current rates on hulls, freight, merchandise, &c., to and from the Australasian Colonies and other parts of the world.

THE

Equitable Life Assurance Society,

(Opposite the Mansion House)

LONDON, E.C.

Founded in 1762.

THE Directors desire to call attention to the great advantages to be secured by insuring in the EQUITABLE Assurance Society, now in the **126th** year of its existence.

The invested Capital is **£4,250,000**, being more than thirty times its Renewal Premiums. The Investments are made in Mortgages, in the Government Funds, and in other first-class Securities.

The Assets are larger in proportion to its Liabilities than those of any other Insurance Office; at the present moment, if dissolved, without taking into account the present value of its future Premiums, it could pay **88 per cent.** of the sums originally assured; no other Office can pay anything like this amount.

No Commission has ever been paid, and, being a Mutual Society, there are no Dividends or Profits intercepted by Shareholders, as is the case with Proprietary Companies. In consequence, the working expenses of the EQUITABLE are only 2¾ per cent. on the Income, being less than those of any other Office.

All Profits are added to the Policies of the Assured.

The Society has paid in Claims, Bonuses, and purchase of Policies **Forty Millions sterling,** of which sum **Eighteen Millions** were paid as Bonuses.

The Society accepts Surrender of its Policies at the true value, without any deduction; or they can be converted into **Free paid-up Policies,** rendering forfeiture unnecessary.

The Society advances money on its Policies up to nine-tenths of their Surrender Value. Such Loans are made, in ordinary cases, without any legal or other charges.

The Society has always given intermediate annual additions to Policies which become claims in the interval between the decennial periods at the same rate per cent. as that declared at the last division.

At every Division of Profits the Bonus then declared can, at the option of the holder, be applied in reduction or liquidation of the Premiums for the ensuing 10 years; and so on with greatly increasing effect at each successive period, the original amount of the Policy remaining in force, with any surplus additions after extinction of Premiums.

The Surrender of Additions in no way affects future Bonuses.

Premiums on Policies can be paid either annually or so as to cease in any given number of years, or in a single Premium for the whole life.

No expense is incurred by Applicants for Medical examination. The Society has its own Medical Referees in all provincial towns, and pays the necessary fees.

The Equitable Life Assurance Society.—*continued.*

It may be added that had the Equitable paid the lowest rate of Commission in use, namely 5 per cent., a sum of **more than Two Millions sterling** would have been

LOST TO THE ASSURED.

The Commission ordinarily paid by other Offices is not only on the first, but on every subsequent Premium.

The undivided sum after the last Division of Profits amounted to **£660,000**, which was reserved as a basis for future additions.

A good test of the position of an Assurance Society is to be found in the following words of the Board of Trade Report:—"The Public cannot be misled "if, when seeking an Office in which to effect an Insurance, they select one "which transacts its business at a small percentage of working cost, and does "not anticipate Profits."

The Equitable Society fulfils these conditions by transacting business at the lowest percentage of working cost, and by not anticipating profits.

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JOHN ALLDIN MOORE, Esq., *Vice-President.*
RICHARD TWINING, Esq., *Vice-President.*

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MEDICAL OFFICER.—WILLIAM MILLER ORD, M.D., F.R.C.P.

PARLIAMENTARY RETURNS.

The Returns of the Board of Trade, made under the "Life Assurance Companies' Act, 1870," and going back for eighteen years, show:—

Premiums received by the Equitable	£2,655,252
Returned to Members as Claims	2,697,344
Bonus Additions Paid in Cash	2,896,687

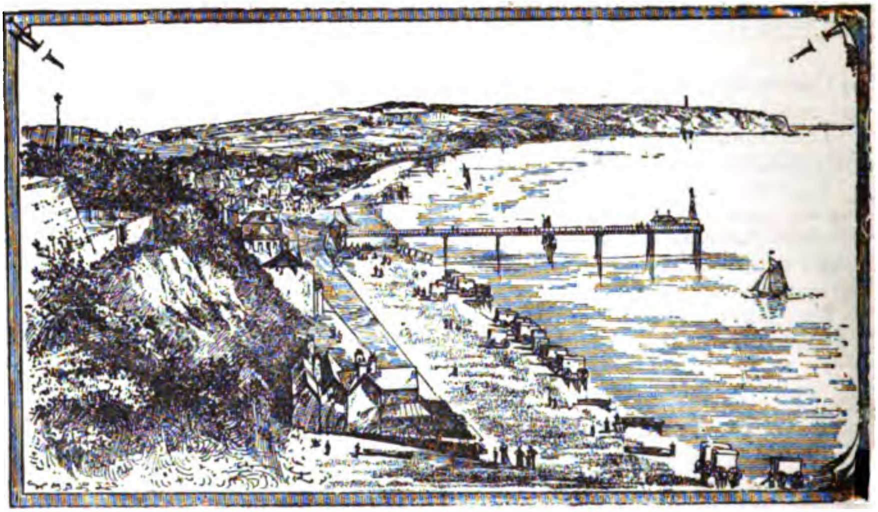
The Bonuses alone being £241,435 more than the whole amount received in Premiums during the above term of eighteen years.

EXAMPLES FROM BONUS TABLE FOR 1888,

Showing the Total Amount payable under a Policy for **£1,000** (*including the Additions*), *in the event of its becoming a Claim after payment of the Premium due in the year* 1888:—

Date of Policy.	Sums payable including Additions. £	s.	d.
From 24th July, 1817, to 16th April, 1818	3,755	0	0
" 7th March, 1823, to 24th May, 1824	3,155	0	0
" 24th November, 1831, to 1st August, 1833	2,680	0	0
" 12th November, 1842, to 18th June, 1845	2,250	0	0
" 1st January, 1856, to 31st December, 1856	1,920	0	0
" 1st January, 1864, to 31st December, 1864	1,567	10	0

SANDOWN (*Isle of Wight*).



THIS is a charming watering place, in a sheltered position on the S.E. shore of this beautiful island. Sandown Bay has been described as the Naples of England. The Sands—which are firm and broad—are about four miles in extent from east to west, forming a magnificent promenade for pedestrian exercise or a gallop. For safe bathing, boating and canoeing, Sandown Bay cannot be surpassed. It is also a splendid place for children.

The Town is well arranged and particularly healthy, and for its general salubrity, as well as equability of temperature, is second to none. There is a plentiful supply of water, and the sanitary state of the town is very good.

* * *

Pretty and well-furnished Villas, also very comfortable Apartments, may be had at reasonable rents, for long or short periods, by applying to—

JOHN BUNT, House and Estate Agent,

Sandown, Isle of Wight.

Local Agent for the Orient Line of Steamers.

N.B.—A FEW GOOD UNFURNISHED HOUSES TO BE LET.

Pure Negrette Merino.

Messrs. STURGEON *gladly show their old established Flock, or select and ship these or any other kinds of Breeding Stock, using their best judgment and the experience of many years.*

Grays Hall, Grays, Essex.

RIDGES & SONS, Wolverhampton, ENGLAND.

By Appointment to Her Majesty the Queen.

PRIZE MEDAL:

LIVERPOOL, 1886.

BUILDERS OF ALL KINDS OF
LIGHT STEEL CARRIAGES, MEDICAL BROUGHAM (6 cwt.), AUTOMATIC LANDAU (8¼ cwt.).
INVENTORS AND PATENTEES OF THE
NEW OPENING BROUGHAM (for Summer and Winter)
See Sketches. Numerous encomiums from users.
The "Field," Feb. 11, 1888, says:—"A remarkably easy arrangement for conversion into a Landau."
Prize Medals attached, awarded in open competition. Well adapted for the Colonies.
A large assortment of New and Second-hand Carriages always on hand.

PRIZE MEDAL:

NEWCASTLE-ON-TYNE. 1887.

The Royal

FIRST - CLASS FAMILY HOTEL,
PLYMOUTH.

HANDSOME GENERAL COFFEE ROOM. ◆ WRITING AND SMOKING ROOM.

LADIES' DRAWING ROOM.

The situation of this Hotel is most convenient for business or pleasure.

SUPERIOR STABLES AND LOCK-UP COACH HOUSES.

Every variety of Carriages for Posting and Excursions.
Omnibuses meet all Trains, Great Western and South Western.

CARRIAGES IF ORDERED. S. PEARSE, Proprietor.

EDWARD STANFORD,

Map & Bookseller & Publisher,

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(Sole Agent for the sale of the Ordnance and Geological Survey Maps in England and Wales.)

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STANFORD'S LONDON ATLAS OF UNIVERSAL GEOGRAPHY. Quarto Edition. Containing 44 Coloured Maps, carefully drawn and beautifully engraved on Steel and Copper Plates, and an Alphabetical Index to the Geography of the World. Second Edition. Half-morocco, cloth sides, gilt edges, price 30/- Size, when shut, 15 inches by 12½.

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CENTRAL EUROPE: Davies's Map of Central Europe. Containing all the Railways, with their Stations. The principal Roads, the Rivers, and Chief Mountain Ranges are clearly delineated, whilst the scale upon which the Map is drawn renders it a distinct and useful Guide for Tourists. Scale, 24 miles to an inch; size, 47 inches by 38. Mounted, in case, 16/-

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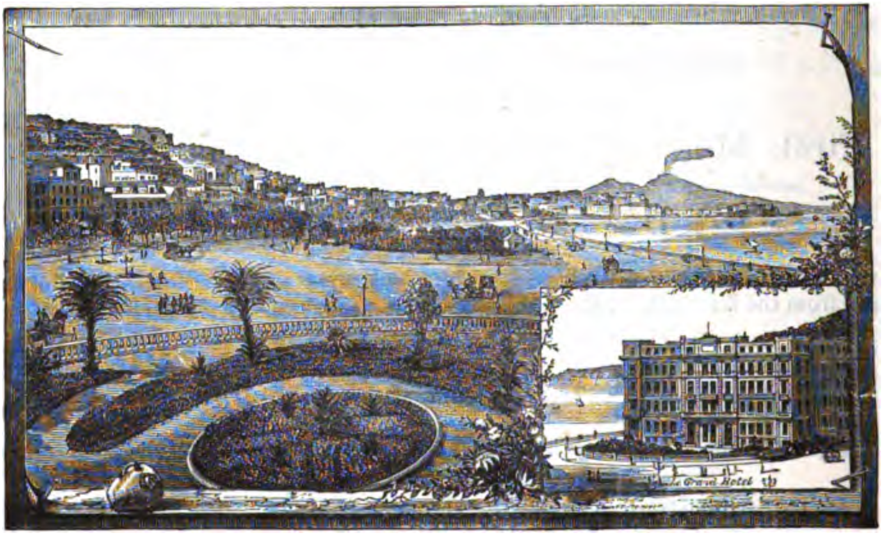

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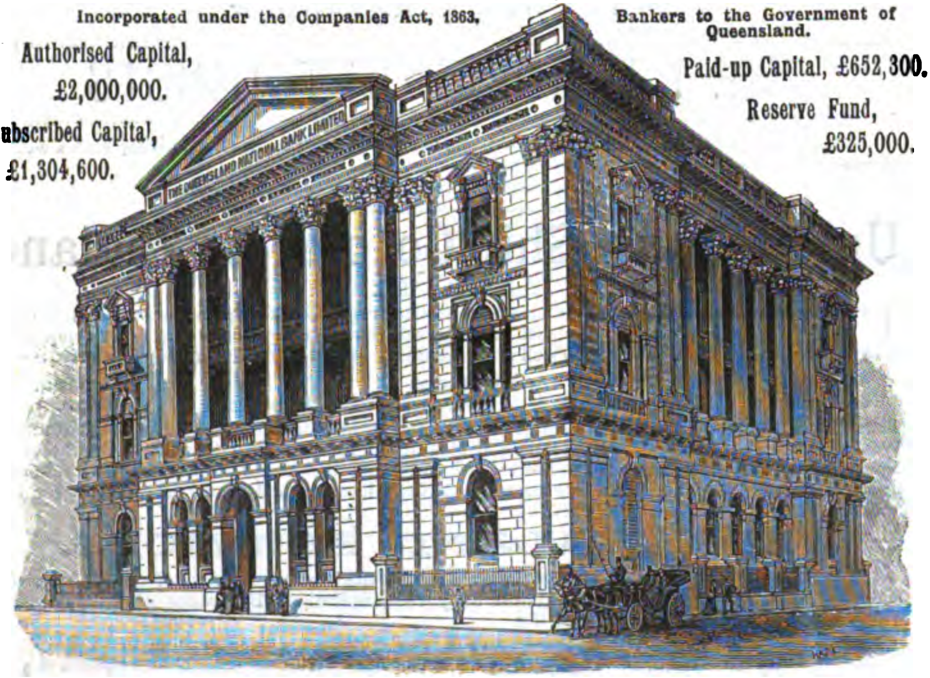
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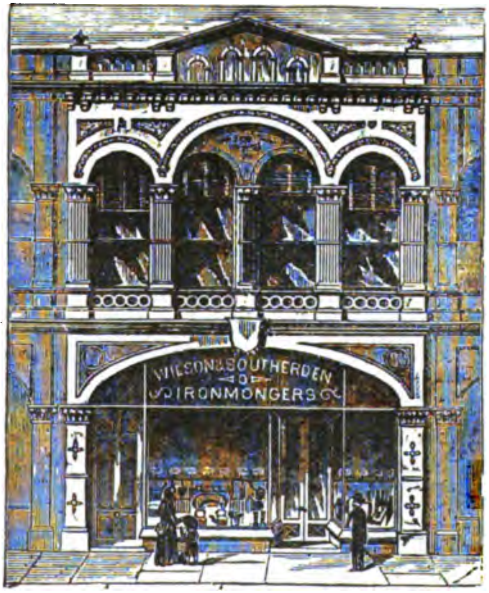

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The best lands on lines of railway, near centres of population and on navigable waters, are set apart and surveyed as farms, with the necessary roads and reserves, the area of the farms being from 20 to 1,280 acres. A transferable lease of the farm, with right of purchase, is issued for a term of fifty years, at an annual rent varying from threepence per acre to higher rates, seldom exceeding one shilling, according to the quality and situation of the land, its natural supply of water, &c. The selector (who must be eighteen years of age at the time of selection), must occupy the farm continuously either by himself or his bailiff or agent, and must, within five years, fence in the land, or expend an equivalent sum in other substantial improvements. The rent is subject to periodical re-assessment, as in the case of grazing-farms.

Acquisition of Freehold.—The freehold of these farms may be acquired at a price fixed when the land is thrown open for selection, and being not less than twenty shillings per acre, generally ranging from twenty to twenty-five or thirty shillings.

In order to secure the freehold there must be ten years' personal and continuous *bonâ fide* residence by the lessee or two or more successive lessees, but any lessee may transfer to any other person who is qualified to be a selector.

In effect, these farms are sold to *bonâ fide* selectors on credit, the rent amounting to something like 2½ per cent. on the purchasing price, all rent paid during the period of personal residence being counted as part-payment of the purchase money.

The purchase of the freehold may be made at any period of the lease after ten years' continuous residence, but if not made within the first twelve years the price is subject to increase in proportion to the increase of rent (if any).

Fifty Years' Lease.—If the lessee is indisposed to purchase he may continue to hold the land on lease for the whole period of fifty years, the condition of occupation being performed by the residence either of the lessee or his bailiff or agent.

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Conditions to Secure Freehold.—The selector must reside personally on the land during the five years, and must expend a sum at the rate of not less than ten shillings per acre on improvements. On performance of these conditions he may claim a grant on payment of the deed fee, amounting to £1 10s. A survey-fee of £7 7s. 6d. must also be paid in five equal annual instalments of £1 9s. 6d.

LAND SELECTION IN QUEENSLAND (CONTINUED).

Free Gifts of Land: Land Orders, £20.—Attention is specially directed to what amounts to a free gift of agricultural land in favour of persons of European extraction paying their own passages, or those of their families in full, to Queensland from Europe, the United States of America, or any British possession other than the Australasian Colonies. A wife, child, step-child, or grand-child is reckoned as one of the family. To persons thus paying their passages in full, land-orders are issued of the value of twenty pounds sterling (£20), for each person of twelve years and upwards, and of ten pounds (£10), for each child between twelve months and twelve years of age. These land-orders are available to their full nominal value in payment of the rent of agricultural or grazing-farms held by the head of the family or the person in respect of whose passage the land-order is issued, and when used in agricultural areas they amount to a free gift of land, as follows:—

Single Land Order.—A single person, eighteen years of age, holding one land-order, value £20, may select in any agricultural area 160 acres of land. The annual rent of sixpence an acre required to be paid for five years to secure the freehold amounts to £20, and the £20 land-order, being available to its full nominal value for this purpose, suffices for the payment of the whole rent, and thus secures the fee-simple of the land as a free gift, excepting the amount of £8 17s. 6d. to be paid for the survey and deed-fees.

The head of a family, say of eight persons, counting seven adults, including the father and mother, paying their passages in full would receive land-orders as follows:—

	£
Father	20
Mother	20
Two children of eighteen years or over	40
Two children of twelve years or over	40
Two children between twelve months and twelve years	20
	£140

Use of Land Orders: Rent.—In such cases the head of the family may obtain either one land-order of the value of one hundred and forty pounds (£140), or separate land-orders, of an equal aggregate amount, in respect of each person. In either case the land-order or land-orders would be sufficient for the payment of the rent of a farm of 1,120 acres for a period of five years at sixpence* an acre a year.

To Convert the Land into Freehold.—In either case it would be advisable for the head of the family to select one farm of 160 acres, which he could convert into freehold without any money payment, excepting that for deed and survey fees, after five years' personal residence and an expenditure on improvements at the rate of ten shillings an acre. He may also select other farms adjoining, the rent of which he can pay with the other land-orders, and which he may transfer to his children from time to time, the land-orders being still available till exhausted in payment of the rent of such farms.

Separate Homesteads.—In families where there are children of the age of eighteen years or over, a separate farm of 160 acres may be taken up by each such person, so that each may secure the freehold at the end of five years, as already described; but it must be remembered that the *bonâ fide* personal residence of the selector (*i.e.*, in the case supposed, the child) is required for five years on each separate homestead, as well as an expenditure at the rate of ten shillings per acre within that period.

Land Orders Pay Rent of Grazing Farms.—Land Orders are also available to their full nominal value in payment of the rent of grazing farms.

For instance, the rent of a grazing farm of 2,560 acres at twopence (2d.)† an acre being £21 6s. 8d., the land order given for a family counting as seven adults would pay the rent for more for six years and a half.

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* Agricultural land may be obtained at threepence an acre, but for tillage farms, the better lands at about sixpence an acre are much to be preferred.

† The rent may exceed this in some cases, and is often less.

LAND SELECTION IN QUEENSLAND (CONTINUED).

Application for Land Orders.—Persons intending to proceed from Great Britain to Queensland, and to pay their own passages in full, are advised to make application to the Agent-General for the colony, No. 1, Westminster Chambers, Victoria Street, London, S.W., for Land Orders; but it should be remembered that these are not transferable, and can be of no use to anyone who does not settle on the land and fulfil the conditions as above described.

Full-paying passengers from the United States of America or any British possession can obtain the land orders in the colony. All persons holding land orders are desired, on arrival at the principal port (Brisbane), to apply at once to the Department of Agriculture, which is under the control of the Minister for Lands; or, if they arrive at any other Queensland port, to the Immigration Officer or Land Agent, from whom they can obtain all necessary information to assist them in the selection of land.

Village Settlement.—Special provision is made for the settlement of little communities, so that the settlers may live together, for mutual protection and convenience, in townships on freehold town allotments, with farms of eighty acres contiguous or in close proximity to their residences.

Land of the best description is now being surveyed in the most suitable localities for carrying out this village settlement, and land orders are available for taking up and paying for the land in these townships. This scheme, it is believed, will be specially attractive to persons paying their own passages in full, and coming to Queensland from Europe and the United States of America.

Freeholds—Annual Payments of Sixpence an Acre Secure Freeholds—Improvements—Township Allotments One Acre.—In these agricultural townships the payments on account of rent are the same as on the homesteads before described—namely, five annual payments of sixpence an acre each, to secure the freehold; the conditions of continous *bonâ fide* personal residence and of improvements being as before stated; but one-fifth part of the required improvements on the farms may be made on the town allotments, which contain an area of not more than one acre. The townships, not exceeding two square miles in area, will provide space for churches, schools, and other requirements suitable for small communities of people, so that mutual assistance and protection may be secured.

Selectors must be British Subjects.—It should be added that a selector, if an alien, must become a British subject by naturalisation (to which no obstacles are offered except in the case of Asiatics) before he can acquire the freehold of his farm.

State Free Schools.—There is no State Church in Queensland, all denominations being placed on one common platform. State Schools are established in almost every part of the colony where there are as many as thirty or forty children.

Trained Teachers—Primary and Grammar Schools.—Well-trained male and female teachers are appointed by the State, and a good English education may be obtained in any of the State schools free of any charge. Grammar schools are liberally endowed by the Government, and scholarships are given annually, by competitive examination, to pupils of the primary schools, entitling them to three years' free education in a grammar school. Three exhibitions, tenable for three years, are also annually offered to students desirous of proceeding to any of the Universities of Australasia and Great Britain.

The Queensland Parliament has recently authorised the establishment of a Department of Agriculture and the appointment of an Instructor in Agricultural Science.

HENRY JORDAN.

Department of Public Lands, Brisbane.

December, 1887.

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J. R. DICKSON, Esq., M.L.A.
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Auditors: GEORGE FREDERICK SCOTT, Esq.; F. M. LASCELLES, Esq.
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Ireland.—Bank of Ireland, Dublin.
Scotland.—Caledonian Banking Company, Limited, Inverness.
New South Wales.—The English, Scottish and Australian Chartered Bank; The Australian Joint Stock Bank.
Victoria.—The English, Scottish and Australian Chartered Bank; The Bank of Australasia.
South Australia.—The English, Scottish and Australian Chartered Bank.
New Zealand.—The Bank of New South Wales.
Tasmania, Western Australia and Fiji.—The Union Bank of Australia, Limited.

The Royal Bank of Queensland, Limited, allows interest on Fixed Deposits at rates which can be ascertained on application; discounts Trade Paper; makes Advances against approved Securities, including Bills supported by Shipping Documents; issues Drafts and Letters of Credit; collects Interest on Debentures and Dividends of public companies; invests moneys in Colonial and other Securities on behalf of its constituents; and generally transacts all usual banking business.

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Paid-up Capital	**£125,000**
Reserve Liability of Shareholders	**£125,000**
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VICTORIA.—Colonial Bank of Australasia; English, Scottish and Australian Chartered, Bank.

QUEENSLAND.—Queensland National Bank, Limited; Australian Joint Stock Bank; Commercial Banking Co. of Sydney.

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NEW ZEALAND.—The Colonial Bank of New Zealand; Bank of New Zealand.

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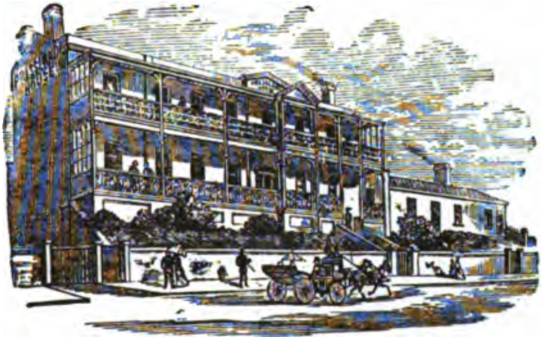

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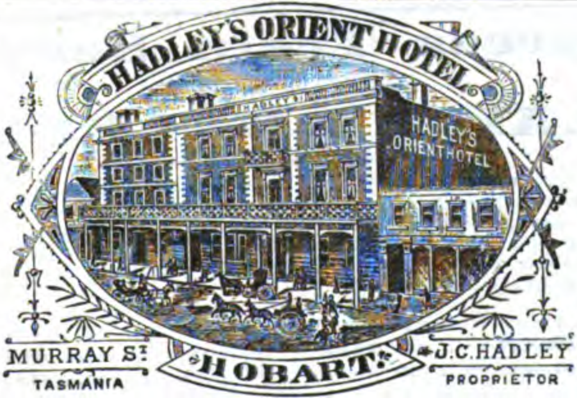

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The Return Tickets are available for two months from the date of issue, and the journey may be broken on them.

Holders of Single Tickets can break their journey at any roadside station, but the through journey must be completed within seven days from the date of issue.

Passengers to or from intermediate stations can only be taken provided there be room.

The charge for Sleeping Berths is 12s. 6d. for each berth, in addition to First-class Fare. Sleeping Berth Tickets can be obtained at North Terrace Station, Adelaide, and at Spencer Street Station, Melbourne, on each day the Express Train runs.

Passengers are requested to see that their luggage is properly labelled before leaving Adelaide or Melbourne, and that a numbered check is received by them for each article.

If the English Mail Steamer arrives off Adelaide too late for mails to catch the Express, but in time for them to be forwarded from Adelaide not later than 9 p.m., a Special Express, carrying mails and passengers, is run, unless the Steamer arrives on a Saturday or Sunday.

North Terrace Station,
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Alan G. Pendleton,
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12	White Shirts, Linen Fronts	7/6	4	10	0
2	Dozen Best Linen Collars	11/6	1	3	0
6	,, Linen-faced Collars	0/9	0	4	6
6	Saratta Shirts	7/6	2	5	0
6	Tropical Flannel Shirts	10/6	3	3	0
6	Colored Sleeping Pyjama Suits	12/6	3	15	0
6	Gauze Merino Banians	4/6	1	7	0
6	Pairs Gauze Drawers	4/6	1	7	0
12	,, Merino Socks	1/9	1	1	0
12	,, Cotton ,,	1/4	0	16	0
2	,, Unvulcanised Braces	3/6	0	7	0
1	Anti-Cholera Belt		0	6	6
1	Sun Umbrella		0	7	6
1	Pith Helmet (Ellwood's)		0	12	6
2	Puggarees	1/6	0	3	0
1	Scotch Maud		0	16	6
1	Soiled Clothes' Bag, Frame and Lock		0	7	6
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Qty.	Article	Rate	£	s.	d.
24	White Cambric Handerchiefs	0/6	0	12	0
6	Black or Blue Spot Silk Washing Ties	1/0	0	6	0
1	Overland Trunk, best quailty		2	2	0
1	Gladstone Bag or Suit Case		1	10	0
6	Huckaback Towels	1/0	0	6	0
6	Bath Towels	1/9	0	10	6
1	Pair Canvas Shoes		0	6	6
1	Mosquito Curtain		0	14	6
1	Tropical Flannel Suit		2	15	0
1	Blue Serge Suit		2	15	0
1	Pair Tweed Riding Trousers		0	16	0
2	Brown Linen Suits	35/0	3	10	0
	Sponge, Brushes and Sundries		0	18	0
			£40	0	0
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EXTRACT OF MEAT.

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LONDON
TRADE
MARK
GENUINE ONLY WHEN THE CERTIFICATE LABEL ROUND THE CAPSULE IS FOUND INTACT
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MANUFACTURED BY
THE LIEBIG'S EXTRACT OF MEAT COMPANY
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MARK
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